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THIS WEEK

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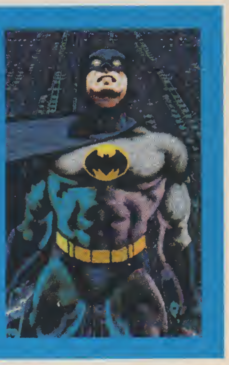
Nintendo's 16-bit console put through its paces.
PLUS
There's a new Sega due too!

1990:

What were the events which shaped the year?

1990:

Find out what Centrefold made of it all



PLUS

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BARGAINS !!!

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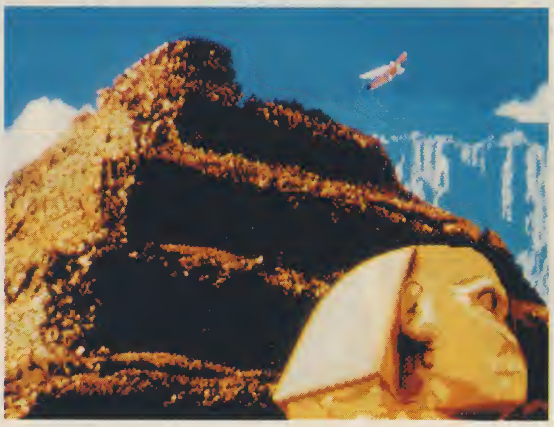
Christmas Games Special

Bombjack bounces back

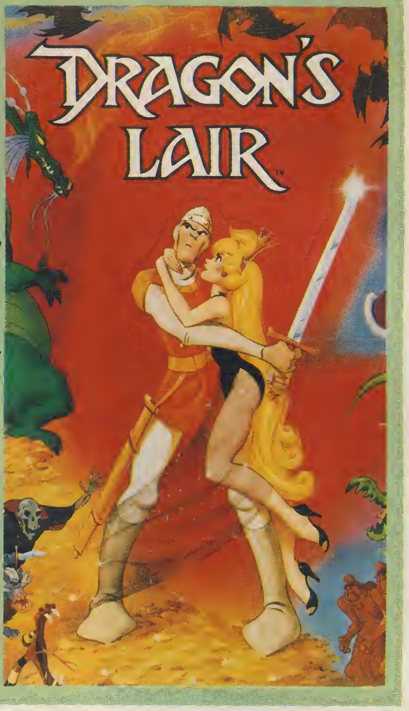


The simple things in life are always the best, and you don't get much simpler than *Bombjack*. It's been one of the most amazingly successful games of the past five years, not because of stunning graphics or depth of gameplay, but because of its vindictive and malevolent addictiveness.

Now Elite has launched *Mighty Bombjack*, a version for the 1990s. Essentially, the game is much the same as before – you get to float around among a variety of backdrops picking up bombs and avoiding baddies. And, as they say, that's it.

Both the original *Bombjack*, launched in 1986, and the later *Bombjack II* hit the top of the charts. *Mighty Bombjack* has already appealed to half a million Nintendo owners so it stands in good stead. It's out for the ST, Amiga, PC and C64 at the end of January. ▒

Handheld Dragon



New UK games label Movietime is to launch a Gameboy version of *Dragon's Lair*.

The original ST and Amiga versions wowed gamers with its state-of-the-art graphics. However, *Dragon's Lair* was terribly short on gameplay, and when it was converted to the 8-bits major changes were made.

The Gameboy version will be the same as that which appeared on such as the Amstrad CPC with plenty of arcade sequences and puzzles to keep gamers happy. It'll be out by the end of February. ■

Late Recall "out soon"

Ocean's long awaited video game version of the hit movie *Total Recall* could be launched any time now, according to the firm.

Programming problems which caused a delay of one month appear to have been solved. A spokeswoman said that the team had been "working flat out" to complete the game before Christmas.

Total Recall will feature five levels with plenty of fights, car chases and cyber action to keep sci-fi fiends happy. ▒

What ho! Jolly wizard prang

"I say chaps. It's chocks away for this wizard new game thingy from a bunch of colonials calling themselves MicroProse. They're awfully decent sorts and you know this *Knights of the Sky* thing is a jolly good wheeze.

"One gets to ride in one's crate from the spiffing comfort of one's own mess. It's an absolutely splendid job and a perfect opportunity to bag some more Bosche in anything from a Sopwith Camel to a de Havilland."

If you fancy getting in some above the trenches action check out *Knights of the Sky* out now on the PC. Atari ST and Amiga versions will follow in a spring offensive. ■

Crosswords go 3D

A weird new concept in word games has been launched by Shropshire based Microsphere.

It's a three-dimensional cryptic crossword, with puzzles running on the surface of a cube, and throughout the layers within. Instead of just 'across' and 'down' clues, there are also 'through' clues.

Cubeword is to be launched on the PC for £19.95. Microsphere thinks it will be a big hit in offices where the PC is king. The puzzle is no cinch – an answer disk won't be available until June (that will cost a fiver). Call 0694 722538. ▒

Atari flies Lynx to Gulf troops

Atari is to donate 60 Atari Lynx games machines to bored American troops in the Gulf.

A total of 15 kiosks each containing four machines will be sent to recreation centres in Saudi Arabia. The booths are similar to those seen in computer shows.

Atari decided to make the donation after a G.I. sent a letter to the company asking for "a sun visor to help play Lynx games". The firm is also offering soldiers the chance to buy Lynx machines at cost price.

Commenting, boss Sam Tramiel couldn't resist his customary dig at Japanese rival Nintendo: "We're sending *American* technology to the desert." ■

Take on the world (again)

Just when people stopped buttonholing you in the pub about "that marvellous man Milla" or "the tragic moment when Waddle missed his penalty" Virgin goes and launches another World Cup computer game.

This time it's the Sega Megadrive version of *World Cup Italia '90* game which was immensely successful in arcade and home computer guise.

No doubt the thousands of Christmas's new Megadrive owners will be joining in the fun of beating the United Arab Emirates, drawing against Ireland, and being thrashed by West Germany. It costs a hefty £29.99. ▒

CONSOLE JITTERS

Speculation was growing last week of a last minute pre-Christmas price-cut on Amstrad's GX4000 games console.

Amstrad has sliced the dealer price of the machine, a move which is being interpreted in the trade as "a nod and a wink" to independent dealers and High Street chains to drop the price of the system. Chains such as Dixons are likely to include the CPC based machine in a last minute sale.

Sources in the trade have been expressing disatisfaction with the CPC console's sales performance and it is understood that many retailers have not found the machine to be the success Amstrad had hoped. This is also the case with Commodore's C64 based GS system which does not appear to have caught on as yet. Both machines are likely to be reviewed carefully by their manufacturers in the New Year.

A spokesman for Amstrad said that Christmas shoppers were simply waiting until the last minute, and that sales had been slow on all consumer electronics products. However, Atari's ST and the Commodore Amiga have performed exceptionally well this Christmas.

The Sega Megadrive appears to be the most popular console among buyers, although that has not come close to the 16-bit home computers in sales terms. Some in the industry have suggested that the so-called console boom has not, and will not, happen in a country where multi-function home computers are still so highly regarded. ■

Hacker in the House

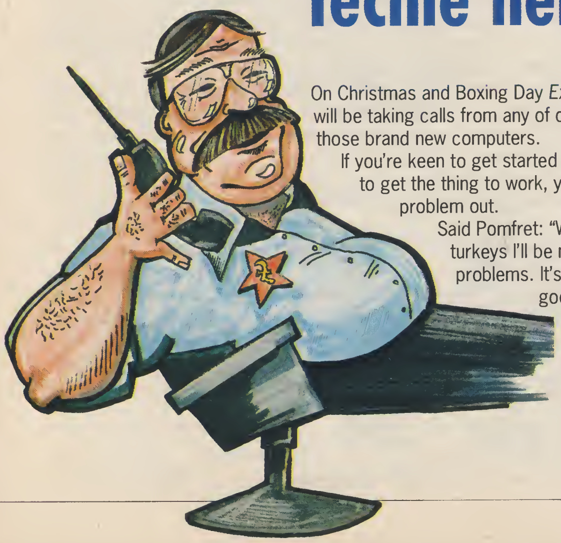
Wouldn't it be nice to have the most important job in the country? To be Prime Minister, the person who tells all the other people what to do?

Unfortunately, it's not as jolly as all that. You've got other politicians to avoid (the Cabinet), important people to suck up to (the press) and, worst of all, there are appalling employees who seem to tell you what to do (the Civil Service).

If it still sounds attractive, why not try Mastertronic's newly budgetised version of *Yes Prime Minister* in which you become Jim Hacker, television's bumbling premier. In the game it's your job to thwart the Civil Service, in the form of the devious Sir Humphrey Appleby, from attempting to "assist and advise the Prime Minister in matters of national importance".

You can take the seat of power for £2.99 on Spectrum, CPC and C64. ■

Techie help at Xmas



On Christmas and Boxing Day *Express*'s technical editor Keith Pomfret will be taking calls from any of our readers experiencing difficulties with those brand new computers.

If you're keen to get started with your new computer, but can't seem to get the thing to work, you can call Keith who'll try and sort the problem out.

Said Pomfret: "While most people are tucking into their turkeys I'll be more than happy discussing techie problems. It's a real pain for most people if something goes wrong with a new machine at Christmas. There's usually no-one to turn to."

Isn't he a love?

Call Keith on Vodafone 0831 129242. Calls cost 38p per minute peak or 10p a minute off-peak. ■

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THE INDUSTRY STR

That great mob of money spinners, capitalists and deal doers – known as 'the industry' – is in serious trouble. Publishers in the software business are seeing sales and profits plummet while more and more companies are being plunged into the dumper.

The most plausible explanation is that buyers are sacrificing nice and legal games in pretty packages (price £25) for nice, but illegal games without packaging (price £3).

More money is going astray than the industry dares to think about; piracy is making the big boys very angry indeed.

Now they're turning on the hated enemy, he who has dodged legislation and thwarted technical obstacles from the very beginning.

But how can piracy be stamped out? Should the industry try a 'softly softly' approach, or should it reach for its lawyers? To find out, read on....

Last week, when *Express* readers offered their opinions on piracy, there were convincing arguments and strong words bouncing around these pages. This week some of the most out-spoken and well-placed people in the industry respond.

An angry programmer

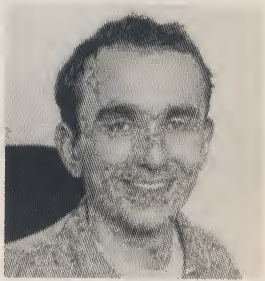
"Pirating is obviously wrong and bad. One reason is the price of software, but I know that many pirates do it for the sense of kudos, just so they can say that they cracked such and such a game.

"We are spending more and more time trying to figure out better protection routines for our games, and therefore we're spending less time on the games themselves. Piracy is causing a bad product to come out because programmers are spending so much time on protection. Ultimately, of course, it's a waste of time."

Would you be a richer man if it weren't for piracy?

"Of course. I mean we're OK, but so many projects only just break even, like our own *Flood*. We're alright because we've got *Populous* to rely on, but other programmers don't have really successful products to back them up. So many of them are just going to give up and work in another industry

"The worst thing, the one that really makes me sick, is when a game appears on a bulletin board before it's even released. This is a crime of gargantuan proportions. What can you say if you've worked hard on something for 18 months, and then you see an unfinished version on a bulletin board? All that work and effort has been poured down the drain."



• *Peter Molyneux: programmer and boss of Bullfrog (Populous and* Powermonger).

But how do these games get out. Surely the corruption must be from within?

"Well yes, I have my suspicions and I believe things are getting worse in that respect.

"Some magazines insist on reviewing games in advance and the publisher will sign an exclusive agreement. I'm not saying the mags are corrupt, but disks do get left on tables ... It's more common among games testers who lend copies to friends and before you know it a pirated version is generally available. We don't send pre-production copies out. It isn't worth it."

Do you fear for the future of home computing?

"I know that many publishers are making a conscious effort to go over to consoles and they're getting heavily involved with Sega and Nintendo. You can see why. Instead of selling one unit which is copied three times, they know that every copy out there is legitimate.

"I think consoles are a big threat to home computing and that is a real shame." ■

The pirate catcher

Can you estimate how much software piracy costs the industry?

"The figure we have is taken from research made last March. We think that in excess of £300 million a year is going astray in the UK alone, and that's just business software. You can probably add another £20 or £30 million on top of that for leisure software. My two colleagues and I could work full time investigating illegal copying of just leisure software, but that's impossible. I have to concentrate my efforts on all sections of the industry including new ones such as cartridge piracy."

Many of our readers believe the price of software prohibits honest purchases. Is this a valid argument?

"Not at all. That is a totally invalid argument. Just ask publishers of budget software – they experience piracy as well. The trouble is that pirates are nothing if not good critics. We find that they will copy any game as long as it is good. The best and most popular games get hit the most. We found copies of the new Turtles game on a raid last week, it had only been out a few days."

How corrupt is the industry itself?

"The industry should be more concerned with what goes on within it. We know that there are some cracking teams who have contacts with programmers, and we know that some publishers still do not fingerprint pre-release products that are sent out for evaluation or review...

"But there is a bigger problem. I share ELSPA's view that we should be stopping the sale of copying devices. Magazines should stop advertising these products. I have to say that the vast majority of copied games we find have 'this was cracked by so and so' on the game. I don't think crackers have the skill to do that without copying devices at their disposal."

• *Bob Hay, Chief executive, The Federation Against Software Theft.*

But many people feel they should make back-ups of expensive games...

"Nobody has the right to make a back-up of a game. In this country it's up to the copyright holder, the publisher, to consent to such a thing. You won't find any games software house that advocates that people need make a back-up. Their position is that they feel that people do not need to make a back-up.

"If buyers think differently they should be making their case to the publishers. It's a spurious argument."

If the publishers are so concerned why don't they sell games with anti-copying dongles?

"Because dongles are very expensive, sometimes more expensive than the games. I don't think anyone would like to see the price of games doubling. Publishers would rather use the current forms of protection, which serve some purpose even if it's a short-lived one." ■

The anti-piracy campaigner

Roger Bennett, General secretary, Entertainment Leisure Software. Publishers Association

Are any of your members in financial trouble as a consequence of piracy?

"Let me just give you an example of one piracy outfit in Glasgow. Until recently it was selling £25,000 worth of pirated software every week. There's no question that piracy is a major problem. Software publishers are losing anything up to 50 per cent of possible sales because of this, and it's getting worse."

Why is it getting worse?

"I think it's because of the 16-bit price point. It makes it more attractive for pirates and for buyers. Piracy is now at a level that is unprecedented. It's so simple to crack games and the savings are such that buyers cannot resist.

"FAST and ELSPA are making tremendous efforts, but it represents big business for major underworld concerns."

Then why don't software publishers reduce their prices?

"It's a vicious circle. It costs a fortune to develop good software, sometimes up to two years in development costs. There's a lot at stake and that money needs at the very least to be recovered. Publishers are finding it difficult to recoup their costs because of the piracy problem that exists. That's why prices are high."

Do you have a solution?

"The only way to stop piracy is to work on an unpirate-able format. Otherwise it's impossible. The trouble is that many crackers aren't in it for the money. They enjoy the challenge. Perhaps the answer is to make it less of a challenge.

"It's worth remembering that a lot of piracy is happening on the continent. I know of one publisher which sent a game over to a European magazine for review. Three days later pirated versions of the game were in circulation in Britain. Luckily the company had fingerprinted pre-production copies of the game so we at least knew how it had happened."

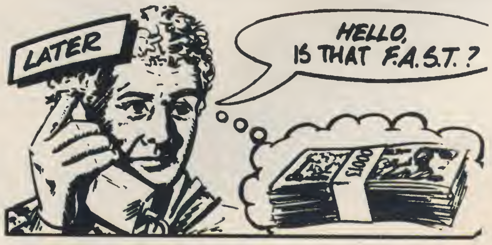
ELSPA has been running anti-piracy advertising campaigns aimed at educating users. Is it working?

"Most definitely, and we'll be continuing that policy."

What about programmers within the industry? We know that some turn their talents to dubious activities.

"You might say that. I couldn't possibly comment." ■

● *ELSPA's hard line; see page 10.*



• *From the ELSPA campaign aimed at bringing pirates to justice.*

TRIKES BACK

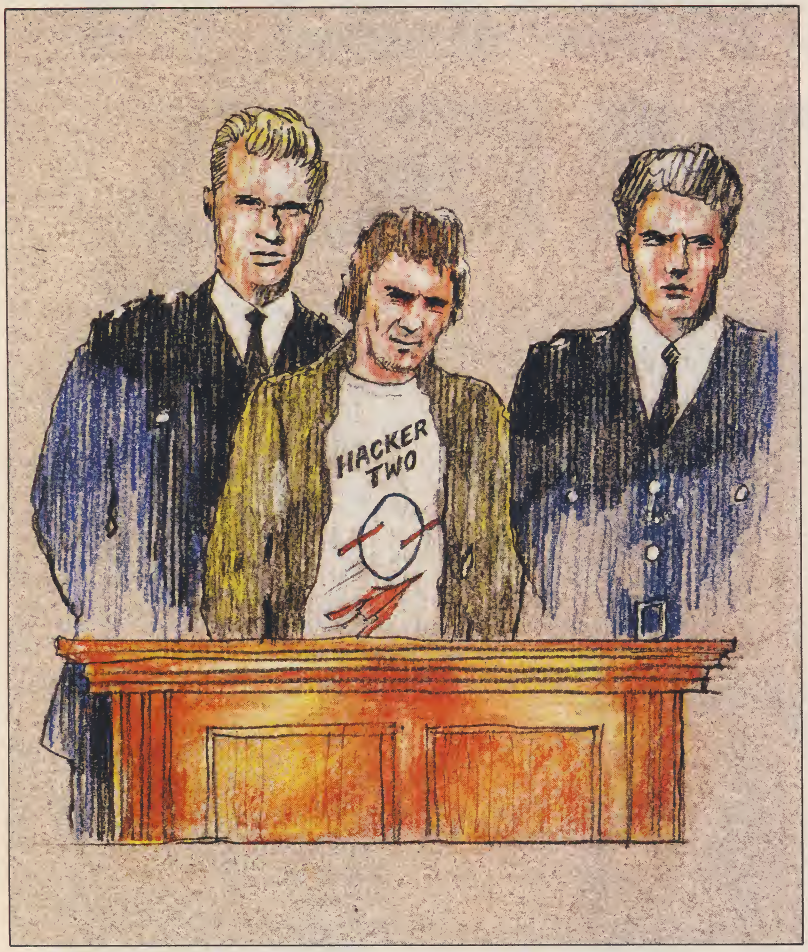


ILLUSTRATION BY GRAEME PUCKETT

The software publisher

How much is piracy costing US Gold?

"We think it's ten to one. For every game we sell ten are being copied illegally. We know that our games are popular among pirates."

What can you do about it?

"We prosecute whenever we can. Obviously it doesn't get onto *News at Ten* but we always take action where possible. It doesn't cost us anything."

Doesn't the high price of software encourage piracy?

"That's a ridiculous argument. If something is too expensive that doesn't mean you can go out and steal it. You don't see people stealing lots of designer clothes just because they're expensive.

"Games have to be a certain price because of costs. The cost of development, of advertising and marketing isn't going down, it's going up. Obviously, if we sold ten times as many games as we do then I could bring the price down. It's a vicious circle. Piracy is keeping the prices up."

Aren't there better methiods of protection open to you, such as dongles?

"We use code wheels, that's as much as we can do. If we added dongles the price of games would be even higher. Of course the hackers break codes in the end but it slows them down and it acts as a deterrent. It's the 'can't be bothered' factor.

"This might work with those people who are in it for the money, but it makes no difference to those people who enjoy breaking protection at home. For them it's a challenge."

Do you think there are people like programmers, games testers and journalists in this industry who are contributing to the piracy problem?

"That is an absolute fact."

Are the anti-piracy public education campaigns working?

"I'm not sure about that. I think it would be better to change the name. It's not piracy, it's stealing. Piracy has this image of fun and swashbuckling bravery. But this is just theft."

Consoles and CDs will signal the end of disks and tapes, and therefore of large scale piracy. Are you looking forward to this?

•Geoff Brown, managing director , US Gold.

"I'm looking forward to the end of piracy, but disk based machines will be here for a long time. There's only so much you can do with a cartridge. You can't run a PC with one for instance. We'll be supporting the traditional formats for a long while. But I am looking forward to the end of piracy." ■

On the front line

Dale Bradford, retailer, Soft Centre, Gwent.

How big a problem is piracy for dealers?

"It's enormous. It can be very disheartening when we see it. I overhear conversations among people in the shop. They'll look at all the new releases on the shelf and say 'Oh, I've got that, got that, got that, and I've had that for ages'.

"I'm selling the same amount of Amiga software as I did a year or 18 months ago, and yet we've sold hundreds of machines. The increase in hardware sales is not showing in software sales."

What can you do about it on an individual basis?

"All we can do is try and educate people that it's wrong. We have to explain that if it continues a machine like the ST, which used to have a good software base, will go the way of XL. Software will just dry up."

Don't people understand that what harms the trade harms the consumer?

"Let's be honest here. It's not really going to matter to consumers. It won't hit them in the same way that it does dealers and programmers and publishers. If Amiga owners suddenly decided to buy only pirated games they would see the software dry up. But then they'd just move onto another machine. I'm sure they'd have a moan and say they'd spent all that money on the hardware, but ultimately it won't matter."

What about the back-up devices which are creating such a fuss?

"If I were a publisher I would not advertise my product in any magazine which allows full page ads of these copying devices. It's just not on to advertise a game alongside a product that can copy the game."

If software prices come down, won't piracy be stemmed?

"Price cuts don't seem likely. For a long time Amiga games were priced at £5 more than ST games – £24.95 and £19.95. At the time I though that was a bit difficult to justify. But instead of bring the Amiga prices down £5, many publishers are pushing the ST prices up to the Amiga level. It doesn't really encourage people to buy legitimate software."

Could there be improvements in methods of protection?

"Yes, it all helps. Better protection won't stop the crackers, but it will slow them down. If it takes them a few weeks to crack a game that makes all the difference.

"But I get people coming in returning a faulty game, and the protection code wheel is missing from the box. They'll just say it wasn't there in the first place."

Cartridge based consoles are becoming more popular. Will you be glad to see the back of disk and tape based home computers?

"Many dealers have been pushing the Sega console as an alternative to the Spectrum. It's not only better from a piracy point of view, but we also get less faulty returns with cartridges.

"But that does have its problems. People don't realise that dealers work on reduced profit margins with consoles and cartridges. And their popularity lets in people like Comet and Dixons. They can just sell consoles and cartridges like they sell microwaves. It's all the same to them, there's no need for technical expertise and so there's no need for an independent dealer.

"We're at a crossroads and I just don't know which way to turn." ■

A magazine publisher

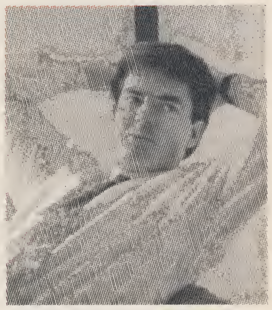
Does piracy harm the computer magazine publishers?

"In the long run it will. The theory is that piracy is hitting the software companies who, as a result, make less money. They then have less funds for promoting their products through our magazines. In pratice it proves to be more complicated."

Magazines are under fire for allowing the promotion of copying devices. Shouldn't you ban these advertisements?

"There are legal uses for these devices and the legal implications of advertising them is, as yet, unclear. Whilst it's important for us to listen to what any industry has to say, I suspect that, if these are illegal, it's up to the courts to prove that.

"There are countless other areas of similar complexity when it comes to promoting software."



• Greg Ingham, publisher, Future Publishing

For big piracy news see page 6

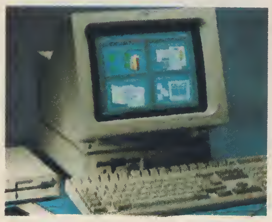
• *Eliminator: virus destruction.*

Official OK for virus protector

***Eliminator*, the virus protection utility from PC Security has been given a government seal of approval.**

The Government Communications Electronics Security Group awarded the program the program a Level 1 certificate in its Licenced Evaluation Facility tests.

The *Eliminator* package comprises two programs: *Virus Clean* and *Virus Monitor*. The first is a disk scanning utility which recognises and removes viruses. The second is a memory resident utility which checks disks prior to program execution. The bundle is compatible with MS-DOS machines, and a Mac version is being considered. Price is £79. For more information all 0628 890390. ▨



• *IBM PS/1: extra drive.*

The PS/1 inches up

Christie Electronics has just announced the arrival of a 5.25-inch floppy drive for the IBM PS/1.

This is not bad going, as this particular PC lacks any MCA expansion slots. To fit the drive buyers should clip it into chips in the computer. The drive is a standard high-density 5.25-inch floppy which can read and write both ordinary 360K and AT-style 1.2Mb disks. As with any standard drive, it can be treated as a physical or logical unit and will run all standard software which will run from the B: drive.

Price is £249, and the drive will available in the New Year. For more information call 0453 823611. ▨

First of many corporate raids for piracy bashers

FAST MOVES IN ON TOP FIRMS

The Federation Against Software Theft has acted against its first major corporation for alleged piracy.

Working in conjunction with the Business Software Alliance, FAST has started legal action against Marconi Instruments – a high-profile company working in top-end communications and with close links to the government.

Four software companies, Ashton-Tate, Lotus, Microsoft and WordPerfect, had obtained authorisation from the High Court in London for an "Anton Pillar" order, permitting an inspection of the personal computers at two Marconi Instruments plants in Stevenage and St Albans.

Following the raid, legal proceedings were initiated. Simultaneously, the BSA and FAST's French equivalent undertook similar raids on France Distribution Systems and Rhône Poulenc Films.

The BSA says this is just the beginning of a "new wave" of legal actions which will be taken throughout Europe in the next year. A spokesman offered: "The piracy problem is causing the software industry serious damage, and we have therefore decided to move forward on a pan-European basis with co-ordinated action action against software piracy in corporations."

Fox Borherhoff Muklder, vice president of BSA and a FAST board member, said: "To our knowledge this is the first time that the industry has successfully obtained an Anton Pillar order in the UK, which allows us to inspect the computers of a corporate end-user where there is suspected piracy. This is an important step forward in the fight against piracy."

An Anton Pillar order allows a copyright holder to inspect premises without prior warning, thus preventing the destruction of evidence.

FAST estimates that corporate piracy has increased by 100 per cent over the past four years. A recent MORI poll found that 55 per cent of senior managers using PCs had copied software illegally. ▨

• *Konix chair: could be converted to run with other consoles.*

Law suit delays for power chair console

Games players are being denied the chance to play with state-of-the-art peripherals because of a legal battle between a design company and Konix.

Stevenage-based Design 6 was the firm which came up with the game chair which featured so heavily in promotion of Konix's Multisystem games console. However, the games machine, and therefore the chair, have never been made available to the public.

Design 6 was also responsible for the recoil action lightgun, but though such a gadget would be a hit with gamers, it is still to be launched.

The firm's boss Gordon Cummings explained: "We're involved in litigation with Konix for money they owe us in design fees. But if they don't settle up we'll talk to another hardware manufacturer and release the chair and gun through them."

Design 6 says it will be in a position to make a definite decision at the beginning of January. He said converting the chair or gun to other machines would not pose too many problems. ▨

Perestroika on the PC

A new games compilation is to be released for the PC market. This one comes all the way from Moscow.

Perestroika **features three games written by Dima Pavlosky, who is touted as "the most talented programmer and thinker in the Moscow-centre community of games authors".**

The bundle comprises three games: *Metal Hearts* is a quick-fire arcade game which is said to include elements of logic; *Rebel Planets* features one key control in an "arcade frenzy" and *Ivan* is a maze puzzle game.

The release date and price for the pack has still to be set. For more

• *Use peripherals for the A400 (right) in the A3000.*

Plug-in power

Owners of the Acorn A3000 no longer need to look jealously at the podule collections of their top-end Archimedes owning friends.

Computer hardware manufacturer Wild Vision has designed an expansion box which fits to the back of the A3000 allowing it to run heavy-duty Archimedes products. The box will take two full width, or three half-width cards. It also comes with a built-in power protection unit.

Price for the expansion box is £139, there is also a special offer which bundles the Hawk V9 colour digitiser as well – this costs £399. For more call 091-519 1455. ▨

Soft Sellers hits the hard times

People are being advised to think twice before ordering software from Ipswich-based mail order and retail house Soft Sellers.

The firm is known to be in some difficulties and could be looking at winding-up procedure shortly after Christmas. A spokesman for solicitors Patterson and Thompson commented last week: "Soft Sellers are not in liquidation. Patterson and Thompson is helping the firm's directors with the business. The official liquidator cannot be appointed until a meeting of the creditors, all of whom require two weeks notice. This means that no meeting can be tabled until after Christmas."

Although confusion surrounds the actual details it appears it would be wise not to make any fresh orders.

If you have already made an order and wish to cover your position you should contact Patterson and Thompson at 12 Lower Brook St, Ipswich, Suffolk. ▪

• The Leo Sport SC laptop.

New laptop in town

Leo Sport SX is the latest 386SX laptop from Centerprise International. The machine comes with 2Mb RAM as standard, with 40Mb hard drive and VGA LCD display.

The laptop sports a single 3.5-inch floppy drive, serial and parallel ports. There is also an option to add 2Mb of additional RAM and an 80387 math co-processor. Measuring 325mm wide, 315mm deep and 60mm high it weighs in at 4.9kg.

Price is £1,995. For more information call 0344 874 004. ▪

Don a Tosh

Japanese electronics monolith Toshiba is to fund a technology centre at Cambridge University to the tune of £600,000.

The head of the centre is Professor Michael Pepper, an expert in advanced microelectronics. This kind of deal is common in Japan and the United States, and is becoming more popular in the UK. ▪

Master System and Megadrive to be upgraded in '91

SEGA CONSOLES GET A REVAMP

Sega is planning to launch new versions of both the Sega Master System and the 16-bit Sega Megadrive.

It is understood that the ageing Master System will be phased out in favour of a more compact and attractive model which will resemble the two-year old Megadrive. The new machine will be configured exclusively for European markets and should be here by Easter.

Sega in the United States has already introduced a Master System II designed to replace the Master System. However, the Euro Master II will be considerably different. Sega feels that the American version will not appear sufficiently "new tech" for European gamers.

In response to Nintendo's Super Famicom – due for a UK launch late in 1991 – Sega will launch a Super Megadrive. This will feature enhanced graphics and sound capabilities and will cost about £30 more than the existing Megadrive.

Sega's research and development team have been instructed to ensure that the Super Megadrive is superior to Nintendo's machine. However, that will probably not appear in the UK until 1992.

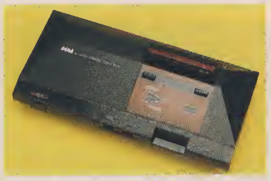
Both the new Master and Megadrive will be 100 per cent compatible with existing systems, although software publishers will be encouraged to write enhanced games for the Super Megadrive.

It is hoped that the Super Megadrive will retail at about £180 when it is officially launched. Trade mag *CTW* was last week speculating that the price of the standard Megadrive will be cut "to below £150" by next autumn.

Nick Alexander, boss of Sega's official distributor Virgin Mastertronic, confirmed to *Express* that a new Master System will be here within months. However, he described speculation of an autumn launch for the Super Megadrive as "wishful thinking". "Such a machine is being planned but we find that most Sega products are launched in Japan a year before they reach Europe. As far as I know nothing has been happening there".

He described the Master changes as being "purely cosmetic" and said there would be "no point" in offering standard Master owners a cheap upgrade path.

Alexander claims that there are 400,000 users of the Master System in the UK. He said the Megadrive, only launched officially in September, had clocked up sales of 50,000. Grey imports could put the real user base up to 100,000. ▪

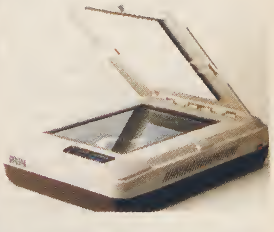


• The Master System (above) is set for an upgrade at Easter. The Megadrive (right) will have to wait longer.

BLAST OFF ON DISK

The interplanetary exploration probe Voyager did a lot more than appear in *Star Trek* films. It also sent back thousands of pictures to Earth.

These photographs, along with those sent back by Voyager II have been collated by computer firm Microinfo, and stored on CD-ROM discs. The first two of these discs are to be released to the public. They will contain images of Uranus, Jupiter, Neptune and Saturn. Planned discs will contain Mars, Venus, Mercury and 'deep space'. ■



• Panasonic scanner: manipulation.

Scan and deliver

Panasonic has introduced a new scanning and image enhancement system for IBM PC compatibles.

Based on the company's flatbed image scanner, the Scan and Edit package includes *PC Paintbrush IV Plus* which provides scanning, editing, enhancing and image manipulation functions.

Once you have scanned the required image you are then able to use techniques such as blending, smudging, gradients, tinting, and enhanced brightness and contrasts. Colour separation, and font incorporation are also available.

Scan and Edit costs £1,195. For more information call 081-864 4422. ▪

Window of opportunity

Professor Windows is a new "individual training" for MicroSoft Windows. Running within the MS-Windows environment, the program uses colour graphics, and hands-on interactivity in an attempt to give the user a feel for the operating environment.

According to the publisher, Individual Software: "Professor Windows offers users unique features like hot words, indexes, and icons that identify activities so users can freely select what they learn next or what interactions they perform."

The package will run on any PC, requires Windows 3 and a hard disk, and costs £49.95. For more information call 071-404 3444. ▩

PC Pal makes easy reading

A new PC-based literacy package aimed at helping people with reading difficulties to get to grips with the language has been released.

Called Pal (Predictive Adaptive Lexicon) the software was developed at the University of Dundee's Microcomputer Centre and has "produced remarkable results, particularly among students with dyslexia."

PAL is used with word processors - WordStar is recommended, and makes predictions as each letter is typed in to the keyboard. According to Scetlander, the company producing the software, this "reduces the number of keystrokes required for a text document by around a half." The software is also able to learn its user's literary quirks in order to increase its efficiency.

Price is £24.99. For information call 041-357 5034. ▩

Can you keep a mega secret?

***Sega Mega Drive Secrets* is a new book which provides hints and tips, as well as a "parents guide" to a number of games available on Sega's 16-bit console.**

Included in the book are tips to *Altered Beast, Space Harrier II, Populous*, *Dick Tracy, Rambo III* and *Michael Jackson Moonwalker.*

Publisher Kuma plans *Sega Mega Drive Secrets* to be the first in a series called *Secrets of Games*. Price is £9.95. Launch is set for early 1991.

For more information call 07457 00373. ▩

Organisers claim £10 million sales and 37,000 visitors de

RECORD ATTENDA COMPUTER SHOPPE

Appalling weather conditions are being blamed on a lower than expected turn-out at the recent Computer Shopper Show at the Wembley Conference Centre.

But despite warnings not to travel on the weekend of the show, the event still managed to attract a record 37,664 people – up 10,000 from the first Shopper Show last year.

Those who managed to make the show were clearly in the mood for recovering their attendance fee in bargains. Buying was at its most frenzied on the many box shifting stands. One company, Diamond, was pushing out imported Sega Megadrives for £99. There were also A590 Amiga hard drives with 2Mb of RAM and leads for £330 including VAT.

In evidence were plenty of squat men sporting Fred Perry's and Essex accents, all frantically shifting boxes and grasping wads of money. The buyers weren't complaining.

Those people who had come to buy a Christmas computer mostly left with either an Amiga, ST or a Megadrive. Peripheral hunters seemed to be most attracted to Philips monitors, colour printers, external disk drives and hard disks.

• Frozen queues: but most thought it worth the wait.

OLIVETTI OFFICE
ATARI ST

• Box shifters' heaven: buyers were spending big money.

For younger shoppers there was an arcade hall as well as Gameboy and Amstrad GX4000 booths. Software sellers with stocks of the Turtles game were engulfed by hordes of grasping pre-pubescents. Good prices on games ensured brisk business for anyone who set up shop.

Organiser Blenheim Database is reckoning on £10 million in sales across the show. Boss Michael Meakin said: "The only thing that let us down was the weather and we can't be held accountable for that. Even all the snow and ice, coupled with warnings not to travel, didn't put the buying public off."

Nevertheless, on a grim Saturday afternoon visitors were advised to make sure they could get home safely, after which the crowds subsided considerably. The box shifters went to bed on Saturday night in an unpleasant mood, built seem to have been satisfied with a better than expected Sunday.

PC manufacturer Multiplex claimed to have done £500,000 worth of business. "It was the most successful show we've ever attended," beamed chairman Charles Forsyth.

There will be another, smaller Shopper Show at Alexander Palace in the spring, with the main Christmas event back at Wembley next December. ▩

As memorable as a bowl of porridge

A survey published by Marketing magazine recently placed television adverts for the the Atari Lynx handheld game machine at the top of prompted 'recall' charts for a consumer electronics product.

One thousand people over the age of 15 years were questioned as to which advert they most remembered.; the Lynx came in as memorable as Ready Brek. A prompted recall survey means that a number of names are given to the interviewees from which they have to say which they remember most.

The Lynx's showing bodes well for three new games which have just been released for the machine. *Ms Pac-Man*, the latest in the cult of Pac, ***Xenophobe*** which attracted mixed reviews in the 16-bit market, and ***Road Blasters***, the post-nuclear drive-'em'-up are all available now for £29.99 each.

A new game called *Zarlor Mercenary* is also in the pipeline. It is said to be a "futuristic space adventure." ■

Ms. PAC-MAN
LYNX
VIDEO GAME CARD
ATARI
LYNX
Ms. PAC-MAN

• Ms Pac Man: Lynx profile.

Can the KGB help you?

Now you don't have to stand in freezing subway stations trying to remember long passwords to make the most of the Soviet secret service. After decades of secrecy, the KGB's massive database is open to all comers.

A Soviet state security committee spokesman recently announced that various agencies within the country had been using the secret police's data gathering and retrieval facilities in order to check up on competition in the business world. This is now to be extended to companies in the West.

Although prices or details of what kind of information could be downloaded were not given, a telephone number was. So, if you wish to make use of one of the biggest spying and counter-intelligence organisations in the world, you should call Moscow +7 095 921 0762. ▩

ors despite bad weather

NCE FOR
PER SHOW

AMSTRAD
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AMSTRAD INFORMATION

• *Brisk business as Christmas shoppers pick up bargains.*

Dixons docked for Z88 ad blunder

The Advertising Standards Authority has upheld a complaint made against the Dixons retail chain regarding an advert which featured the line: "Cambridge Z88; clearance price £79".

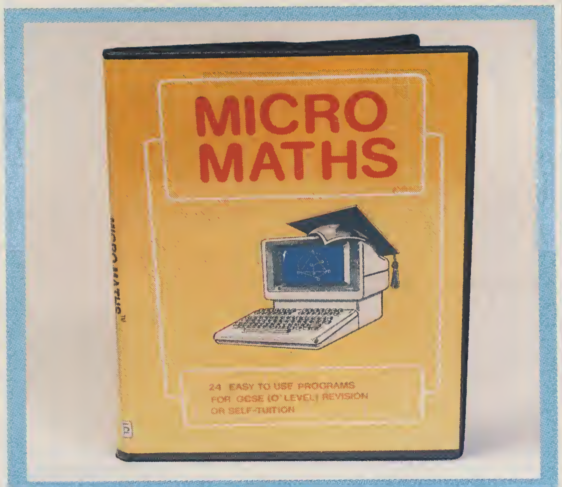
• *Dixons: slap on the wrist.*

The person who lodged the complaint reported that that they had 'phoned all of Dixons' branches in Devon and Cornwall only to be told that none of the stores stocked the item and that they should look elsewhere.

In defence, Dixons gave details of various stores in the area which did stock the bargain priced portable. The store was unable to explain away the telephone conversations between the customer and stores.

The penalty at the end of the inquiry was a slap on the wrist with Dixon being "requested to ensure that all branches are fully conversant with the terms of such offers...".

Earlier this year Dixons had offered cheap prices on certain computers. However, there were only a few of them and most were old presentation stocks.


MICRO MATHS
MICRO MATHS
24 EASY TO USE PROGRAMS FOR GCSE (O' LEVEL) REVISION OR SELF-TUITION

•*Micro Maths: not much fun, but what do you expect from mathematics?*

Your number's up

Studious Speccy Plus 3 owners are to be offered a "complete GCSE mathematical course" called *Micro Maths*.

The program features all topics common to examination boards including such lovelies as algebraic equations, polygon properties, trigonometry, indices, vectors, matrices, triangles and "much more".

Publisher LCL reckons such educational programs will persuade parents to invest in the Spectrum, which is used by most people as a games machine. *Micro Maths* is also available for the cassette based Spectrum Plus 2 as well as the C64, ST, BBC, CPC, PCW, PC, Archie and Electron. Call 0491 579345. ■

Student hacks make Mac impact

Computer publishing whizzkids at a Lancashire College have produced the first full-colour paper to be entered into the NUS student newspaper of the year contest. The publication was produced on the Macintosh.

The tabloid paper was put together using the DTP package *PageMaker 4* on four Apple Macintosh SEs outputting to a Linotronic 100 and printed on the local paper's printing presses.

Editor Zaffer Khan said: "The first time I worked on a college publication two years ago we typed it and pasted it onto paper which we then duplicated. Now we've been trained on the Macintosh we have the technology to do things professionally. We believe *The Mediator* is the first full-colour student paper in the country. Certainly people I've spoken to like staff on the Manchester University paper, *The Mancunian*, say they've never seen a full-colour student paper. In fact they asked us to send them a copy."

In at the DTP end

A new series of desktop publishing systems based on 386, 386SX, 325 and 486 PCs has been launched by Cardiff-based OsicomTechnologies.

A basic unit, the Executive SL comprises a 386SX PC with 40Mb hard drive, 14 inch super-VGA monochrome monitor and costs £1,295. The top of the range unit is the uses a 386/25 PC with 80Mb hard drive, 1Mb 8514/A graphics card, and 21 inch colour monitor - price is £4185. IDE Intelligent hard disks allow storage up to 150Mb to be fitted to any Osicom system.

Software available to the systems includes PageMaker and Ventura. For more information call 0222 778888. ■

• *Low cost DTP: Page Osicom.*

The worm turns

Robert J Morris Jr, the man convicted of unleashing the Worm virus which swept through thousands of computer systems in 1988, is appealing against his conviction.

Morris, a former student of highly rated Cornell University, was sentenced to three years probation, 400 hours community service and a £10,000 fine for his crime. However, his lawyer is arguing that Morris did not "intend damage". The American attorney is also claiming that "the law under which Morris was prosecuted is not a computer virus law and, in my judgement, does not cover the activities for which he was convicted."

The US Court of Appeals is currently considering these arguments before returning with a final ruling.

OS/2 chums go on-line

Users of the OS/2 operating system can rest easy in the knowledge that their long years of loneliness and solitary misery are finally over.

The OS/2 User Group, along with IBM and Microsoft, has set up an on-line bulletin board in order to bring users closer together.

Jim Watt, chairman of the group eagerly commented: "With IBM and Microsoft's help we have been able to meet our members needs for up to the minute news on OS/2 issues. Already the demand has been overwhelming."

The bulletin board has 100Mb of data just for OS/2 users, as well as files from around the world. Details are available on 0285 655888.

THE WEEK IN VIEW

A warning to all software pirates: YOU WILL BE CAUGHT! Roger Bennett, ELSPA general secretary, tells you to stop now while you stand a chance.

I have been told by a number of people that they think software prices are too high. Of course they are. Isn't everything? Entertainment software prices are nonetheless probably artificially high.

To redeem the very substantial development costs involved, in a market where piracy causes substantial loss of revenue, software publishers, of necessity, have to charge more than they would wish to do.

In short then, the greater the piracy, the higher the cost! It is an ever spiralling situation, with the only solution being the elimination of pirating through protection on the program and traceable 'finger printing'. The latter has already been successful in establishing the source of a pirating ring. Equally, ourselves and FAST through close co-operation are making every effort to bring law breakers to book.

The law is quite clear. Section 16 of the Copyright Designs and Patents Act states that "to copy a work is the exclusive right of the copyright owner". Therefore without written permission from the software publisher it is a criminal offence to copy or 'pirate' software. ELSPA together with FAST are doing all they can to discourage the practice by catching and prosecuting those who infringe the law, while making it as difficult as possible for anyone to obtain copying devices through advertisements placed in computer entertainment magazines.

Back-up devices are seen to fall into an illegal category now that software publishers are making it clear on the product that it is illegal to back-up as well as copy. We would hope that it will very soon be impossible to find any back-up device advertisements within the computer entertainment press. Many magazines have already agreed to co-operate.

We do take our responsiblities extremely seriously at ELSPA, and our confidential 'Piracy hotline' (0386 833501) is constantly available to anyone who wishes to pass on information about anyone known to be pirating software. We are getting a growing number of genuine calls on this line which we are following through. However, we need evidence to be confident of a successful conviction. Alternatively, we can be written to at the address given at the end of this column.

Readers may perhaps have noted that there is a series of advertisements in cartoon style running in most magazines, which highlights the fact that ELSPA will provide a £1,000 reward for information which leads to a conviction. It seems quite possible that the first payment will shortly be made as a result of information received through the 'hotline'. There is now a strong chance that you will get caught if you are illegally copying software. You have been warned.

If you want the opportunity of buying original high quality software at reduced prices then help us catch those people who are breaking the law. ■

● *ELSPA can be contacted at: Arden Mill, North Littleton, Nr Evesham, Worcs WR11 5QP.*

Express Access

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COMING A WEEK ON THURSDAY

Maximum Potential
The definitive Express guide to making the most of your machine

Broken by Boxing Day?
A Tech Tips' timely guide to resurrecting the dead the fastest way possible

Crystal gazing
What will be the launches and events dominating the coming year?

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- Hot news
- Front End
- Games Week
- The Console Zone
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- Centrefold
- Tech Tips
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AND
Your chance to win a state-of-the-art Laptop

AT YOUR NEWSAGENT ON THE 3rd

NEW

Commodore

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PART TWO
More Next Year...

EXPRESS MAIL

Our man Haydn F-W concludes his part of the piracy debate in the last letters page of 1990.

Write and tell HFW what you think about anything under the Sun! Reach him at: *Express Mail, 30 Monmouth Street, Bath BA1 2BW.* Sorry, no personal replies, even with an SAE, as we're too busy writing the magazine.

■ No excuses

I bet Kopite goes around and kicks postmen's heads in to see if there is any cash in the mail. Or maybe he just kills old grannies to get at their pension books. It's just the same, isn't it? (Not quite – H F-W) What he is doing is stealing – not from the big software company though, but from the individual programmer. The one who has spent almost six months of his life putting numbers into a machine for absolutely nothing because people like Kopite just get a pirated copy of his game. It's wrong, and there are no excuses for it.
Aza, Huntington, Cambridgeshire.

■ Firebreathing

I read with growing anger the immature rantings from Messrs 'Computer Freak' and 'The Kopite' in *Express 103.* This letter is not in reply to theirs, but to the paragraph you added beneath – great stuff!

Almost all computer literature I read contains letters like those from the aforementioned, but I read with delight the reply you gave and feel a sense of relief that someone has had the guts to breath fire on these naive morons. Keep it up.

The absolute claptrap about piracy not being linked to poor sales almost made me rip my copy of *Express* in half. I hope they read this letter, even if it does mean going to an adult to ask what the long words mean.
D. W. Chelmsford.

Glad you liked our illustrious Editor's attitude, DW. H F-W

■ Flawed reasoning?

The letters from those ST pirates raise some important points. First things first, crackers do not gain financially from their activities. Cracking protection is done for the challenge and notoriety, nothing more. Despite your condemnation of crackers' clandestine activities, I feel your arguments are fundamentally flawed for the following reasons:

1) Software houses do not financially lose if all I can spend on software is £20 per week and I still copy games. Anything I copy is something I couldn't have bought anyway, so who loses?

2) Many crackers have contacts in software houses. *Rainbow Islands* was on all the networks a good five months before it was released commercially.

3) Your magazine often advertises 'backup' devices. These hardware-based devices are specifically designed to make an exact copy of the source disk. 'They have legitimate uses' I hear you say. Oh yeah! And my neighbour uses his 3.0i 24 valve Senator to accelerate from 0-70 mph as quickly as possible and then stays at 70, never breaking the speed limit.

4) Most crackers become commercial programmers and are intelligent people. If your prognostications concerning the demise of the software industry due to cracking are true, then why would they jeopardise their own future employment?
P Mallabar, Gateshead.

1) And I suppose the sweetshop on the corner of your street doesn't lose if you nick the sweeties you can't afford within your weekly sweetie budget?

2) Software houses do sometimes release versions of upcoming games onto the cracker/pirate network to get publicity for a forthcoming release in much the same way as they put demos on the coverdisks that accompany *Amiga Format* and *ST Format.*

3) Gunsmiths advertise and sell shotguns, car manufacturers produce and sell performance cars. Some people use them within the bounds of the law, others break the law with them. Should the law-abiding customers be denied the benefits of products just because the law-breakers misuse them? I think not.

4) 'Illogical Captain' So these 'reformed crackers' continue to distribute free versions of their own games when they become commercial programmers and are in line for royalties on sales?

H F-W

■ Dongles dangled as anti-piracy device – but can they work?

Whilst browsing through the games in W H Smith's one lunchtime I came across a cricket game which appeared to require a dongle to make it run, and I thought that this might be a good idea for software houses that want to reduce piracy.

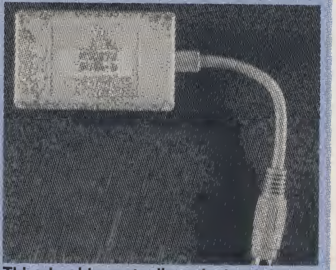
The use of a dongle would make it possible to create back up copies of the game or program that you were using, and thus keep the original in a safe place, but it would stop people from making copies for their friends because the copies wouldn't work without the all-important dongle.

As about 90 per cent of all pirated games are those circulated by 'playground pirates' or 'college copiers' then this would force anyone wanting to play a game or use a serious program to go out and buy it. The professional pirates would also be hit as they would then have to invest in the machinery necessary to make the dongle and produce a different one for each game or program, pushing up costs and making their copies uneconomic.

The resulting increase in sales would mean increased profits for the software houses, which could then reduce the price of the program and increase sales further, which in turn would mean ... Well it would be nice if it did happen that way.
P J R Mead, Wallington, Surrey

What a pair of nutters those two pirates in *Express* 103 were! Sorry boys, but given the chance I would give your address to FAST. Having spent over £800 on my Amiga I'm not letting you make my computer obsolete because software houses won't support it.

I am surprised that the big software houses have not got together and designed a hardware add on unit between them. The interface should be available cheaply to consumers and could be based on smart cards – the smart card would hold all the protection information and would be given with the disks. Without the card inserted, the program would not work. The initial cost of hardware could be recovered quickly by the much-increased sales of software.



This should eventually make top software cheaper!
James Mason, Ontario, Canada.

Hmm. A few companies have tried to use dongles with games, but they never really worked. Either the cost of the extra hardware made the game too expensive, or the protection system was evaded by crackers who produced a new version of the game code that would run without the dongle device being present.

But if you think about it, cartridge games are effectively their own dongle – which is why software publishers are so keen on them! H F-W

■ 'Interesting points'

'Kopite' is clearly a sad, pathetic, semi-literate dickhead, but your argument against his almost-coherent views on piracy has a hole in it so big you could drive a train through it sideways. You 'admit there are only half-a-dozen games released each year worth buying'. This raises a number of interesting points.

1) How is an ordinary game-buyer supposed to discover which are these half-dozen? Reviews in magazines are frequently contradictory, always subjective and, therefore, no reliable guide. Unless you are one of a small minority with a friendly, local specialist shop, the chances of getting to see a game before you buy it are almost nil. Have you ever tried getting WH Smith to load up a game for you to look at?

2) Perhaps you think it's reasonable for game-buyers to have to shell out £20 plus for substandard product, just to find out that it is substandard? This strikes me as not only stupid, but immoral.

3) Alternatively, if there are only half a dozen games worth buying then the other ones aren't going to be bought anyway. So if someone does pirate them, what bloody difference does it make? If you weren't going to buy it anyway the software company isn't losing any money.

4) The 'games are only so expensive

because of piracy' myth is such an ancient and discredited one that it beggars belief that anyone is still clinging to it. How come console games cost £30 a time then? They're virtually impossible to pirate and, certainly in the case of 8-bit consoles, much less sophisticated than the average ST/Amiga game. The truth is that games are priced at whatever the market will bear. Surely you can't believe that if piracy was wiped out tomorrow, all software houses would suddenly knock a tenner off their prices in a fit of pan-corporate generosity? The opposite is more likely to be the case.

Karen Eliot, Edinburgh

But how many people go out and buy a copy of a bloody good game that they first got as a pirated copy?

H F-W

Copy wrong?

Doesn't it seem strange that this crusade against piracy, be it in hardware or software, is in danger of getting out of hand? Coming down on a mere copier of someone else's work is one thing; subjecting to the same treatment one who modifies, rearranges, even improves the original is something quite different, since you cannot sanely maintain that the resulting product is a 'copy'. It makes nonsense of the whole concept of an 'industry standard' to do so.

Two things one must hope for in the current state of affairs: one is that Lotus, and all other like-minded corporate bully-boys, discover that their recent victory over Paperback Software International is of short duration: that it does not get echoed in legal decisions over here, and that Borland turn out to be tougher than Lotus anticipated, and Lotus end up losing!

The second? That a proposal now before the European Parliament, currently backed by IBM, Apple, DEC, and Siemens, and aimed at making not only 'reverse engineering' illegal but even software analysis meets with similar crushing defeat.

Copyright must be severely limited to covering the making of mere copies of either hardware or software. It must not be allowed to cover add-ons, compatibles, expansions, or anything else of the kind. Since not even IBM can succeed in producing configurations that suit every customer's taste, it is strange that Atari has apparently said, in effect, that may now buy an STE, but only if we reconcile ourselves to having to buy a bigger machine if we want to upgrade! Did they stop and think before embarking on this course?

Barry Gowland, Newport Pagnell

I'm sure they did

H F-W

Spoof of the pudding

You may be relieved to know that, although I intended to chip into the piracy debate with a spoof pro-piracy letter under the pen-name of "Wayne Kerr", I decided in the end not to do so. Partly because it would have been difficult for any such letter to have been sillier than most of the real pro-piracy opinions floating around; for example, how can programmers possibly "pirate" their own work, as one prize twit stated? This is yet another example of the confusion between backing-up, which is legitimate (are you reading this ELSPA) and piracy, which is anything but.

Robert J Baker, London

Thanks for not sending the spoof Robert

H F-W

Foul language

This letter is aimed at the foul mouthed humanoid 'The Kopite of G Force'.

Why is it that you feel the only way to put over your point is through the use of bad language? To some extent I do agree with you. I myself use some pirated software but to say that it is only in the search for a worthwhile game to purchase is ridiculous.

On speaking to my father, who happens to be a psychiatrist, he assures me that your common use of profanity probably stems from your upbringing and over the years has developed into a neurological disorder. Kindly keep your profanity to yourself and others like you.

'Ozz'

Muggers not pirates

Speaking as a programmer I find it astonishing that you can even begin to debate a subject which is so obviously an open and shut case. Pirates, and that name gives them far too much of a romantic image - muggers would be a more appropriate phrase - have no rights legally, morally or ethically. This means that they have no valid voice in any kind of rational discussion.

Intellectual property should be as inviolate as personal property, bricks and mortar. I mean, you would not start a debate about burglary and allow burglars to air their views now would you? So why give over perfectly good pages to these scum and their vacuous arguments? There is no reason, and if you ask me you are encouraging them by giving them a forum.

By allowing them a nationwide voice you are giving them credit, and by giving them credit you are setting them up as role models for other, younger and more impressionable people to look up to and eventually to emulate as computer terrorists.

I work long and hard trying to produce original code. As I am not tied to any software house, I have to market my wares as well. This is a 24 hours a day, 365 day a year job - and I doubt that any of the software muggers in your pages have the slightest idea what a minute's work is. The more I write about this, the more irate I become. So, in future when you receive letters from this type of person, why not just send their details to FAST and have done with it.

S S, Cardiff

It is well known what the stand of *Express* is on the subject of piracy. We do not condone it in any way. It is also a function of any journal worth its salt to allow its readers to make their voices heard. If someone writes to us freely admitting that they regularly pirate software then we certainly will forward their details to the relevant authority. The job of a debate is to put various arguments in order to divine the stronger from the weaker – and that's ethically and morally. By the way, most of the pirates who write in have condemned themselves from their own arguments, see the next letter....

H F-W

A point pointless

Whingeing, moaning software houses and the pathetic little mummy's boys who work for them are asking for everything they get. I'm not scared of FAST or anyone else. If there's a game which I think I could have done better, then I'll crack it wide open, and I don't need some 'crew' to back me up.

It's nothing to do with the challenge or the skill - I know how skilled I am which is very, the most - it's to do with the fact that I can make money out of doing it. My mates don't want to pay out 30 sovs for a game when they can get it from me for £15. And I'm sure as s**t not going to give them away.

The Replicant, Here

This is the kind of mindless, machismo which destroys any argument which could be made in your favour. Please write again with your proper name and address, if you're really not afraid of FAST.

H F-W

Rough and ready

I have nothing but sympathy for people who point out that computer games are grossly over-priced. In my opinion, they are. But instead of going out and pirating them, I simply stopped playing, and buying them. I decided instead to try and learn to program. Being on the bad side of 65 I have the time to do so on my Amiga 500.

I can quite see how people who have learnt to program might want to show off their skills. Especially young people. I don't know anything about all of this conspiracy theory about software houses not treating programmers well so I won't comment on it.

The one major point which really saddens me is that people who have learnt a new language and a new skill should feel that they have to turn their knowledge to the wrong side of the fence as it were. Why is this, and what can be done to change their views? Surely if these energetic and intelligent (programming is not easy after all) people started up their own companies or simply wrote games we would have a lot more software; and it would be cheaper.

Alan Amorey, Crowthorne, Berks

The points you make are laudable. It is certainly saddening that people do not turn their skills to more constructive purposes.

H F-W

MAIL SHORTS

A matter of record

Once when I had some ST peripherals to sell I got replies from people offering to sell me pirated software. Had I had FAST's number (this happened before I saw their ad) I would have reported them.

Darryl Boulton, Ross-on-Wye

The new hotline for reporting incidents of games piracy is 0386 833501, Darryl.

H F-W

Short, sweet & stupid

I think pirates suck like a radical vacuum cleaner!

Teenage Mutant Ninja Intellectual, Tyne and Wear.

Young fool

You asked for interesting points for your piracy debate. I thought of the following: if you're done by FAST do you get a Software Lawbreaker's Official Writ? (SLOW – geddit??)

I wouldn't get one, because I'm only 15 so I can copy what I like.

Dale Cooper, Northbourne, Dorset

You might have a nasty surprise coming your way, Dale. At fifteen you can be held responsible for some of your illegal actions.

H F-W

Art critic

Here's an analogy to consider; when Marcel Duchamp painted a moustache on Leonardo's Mona Lisa was he making a legitmate add-on or merely copying another person's original work?

Melvyn Barg, Lewisham

Who knows?

H F-W

A twit twitters

I'm not a pirate but I think that those people who have the skills, and the tenacity to work for days on end in order to uncover the secrets of other people's code deserve some respect.

Thomas Ralph, Kirkcudbright

And Ron and Reg Kray were skilled boxers who should be admired for turning their abilities to dodgy ends?

H F-W

And finally

Piracy is theft. Plagarism is mediocrity. And copying is the highest form of flattery? Surely we should be told.

M F Cripps, Stowemarket

Lost in the post

Bit of a cock-up on the crisp fivers front I'm afraid. If Fred Baptiste and Daniel Wood would like to get in contact with their addresses, I will know where to send the loot.

H F-W

1990: HOW

We take a look back at a year that saw, if not a revolution in the computer industry, a few turn-ups for the *Express* at least ...

JANUARY

January was very much Atari's month for hitting the headlines, largely for the wrong reasons. Buyers of STs were finding not the STFM they had expected but an upgraded STE, with enhanced sound and graphics. This would have been great, except the STE didn't run many existing ST games. Atari put the blame firmly on the games writers for breaking the rules – cold comfort for the buyers. On a brighter note the Lynx colour hand-held finally arrived in Britain, to a rapturous welcome.

January also saw the first news break of the Amiga-based CD-ROM computer-cum-home-entertainment-centre the CDTV – although the name was still not known then. We are still waiting to see the machine, although it is promised real soon now.

Two machines which did see the light of day (although yet to be officially imported) were the Turbo Express and the Super Grafx. The first was a hand-held version of NEC's PC Engine console, playing the same cartridges as its house-bound brother; the Turbo Grafx was an upgrade of the PC Engine offering more colours, more sprites and more exciting gameplay.

Other headlines:

Rights row halts CPC464 upgrades

Amstrad and Locomotive banned the sale of upgrade ROMs

Mind micro on sale in States

The 'brain-altering' MC2 machine was launched

FEBRUARY

February was Amstrad's month for making the front page. One week *Express* was exclusively revealing the imminent launch of a new range of PC-compatible portables and the PC3000 series, and only seven days later our front page screamed: "EXCLUSIVE: Autumn Launch for CPC Trio", heralding the CPC Plus range and the GX4000 games console. A spokesman said: "I haven't heard of any of these machines" but come the autumn they turned up on schedule.

Commodore wasn't idle last winter either; the super-powerful Amiga 3000 got its first outing at the Paris Holiday Inn, being billed as the multimedia Amiga. Its 25MHz 68030 chip left the competition standing.

On a smaller scale the SAM Coupé finally became a functioning computer with the overdue arrival of the floppy disk drive – but it didn't have a working DOS; unfortunately it had already missed the boat.

Politics seized the computing headlines for a while in February as two Tory MPs fought it out over the wording of anti-hacking legislation. Michael Colvin wanted his bill to be sure of passing the Commons, so he rejected Emma Nicholson's more hard-line ideas. The Computer Misuse Act was passed in the summer.

Other headlines:

Computer monitors in radiation shock

New research showed dangers in TV screens

The world's first laser processor

AT&T made a breakthrough in optical computing.

• Sam Coupé: great expectations but the DOS don't work

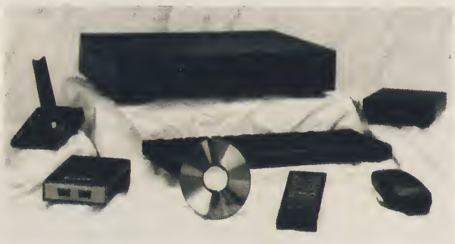
MARCH

Atari came to the fore in a series of stories concerning new products and, more worryingly, staff redundancies. Atari lost one in seven of its US employees, despite predicting a good year for profits. The firm's boss Sam Trameil suggested a hand-held ST was on the cards, but the idea seems to have sunk without trace. Rumours of a CD-ST picked up, but Atari didn't seem sure on the possibility of a machine to rival the CDTV.

Atari did score one notable sucess in March – the launch of its still-current bundles, including the cheap STFM Discovery pack, which went on to be huge sellers. Also bundling away were Commodore with the short-lived Flights of Fancy pack.

Hand-helds were the order of the month in Japan where Sony showed a hand-held electronic book called the PalmTop, and Sega's GameGear colour games console became another *Express* exclusive.

On the home front the SAM Coupé's DOS finally was sent out and Miles Gordon put up a £20,000 prize for the best use of its problem-plagued baby.



• The Commodore CDTV: much promised, long awaited.

Other headlines:

Breakthrough for 'listening micro'

A PC-based speech recognition system – bespoke?

Hot line targets corporate pirates

FAST launches an 0800 number for piracy tip offs

APRIL

A quiet month for news with no major launches – although rumours of an Amiga portable were rife. Education took centre stage as Commodore and Acorn produced bundles aimed at parents looking for a computer to help their children learn. Both the Amiga Class of the '90s and Archimedes' Learning Curve packs met with considerable success.

Less fortunate was the SAM Coupé; they got the completed machine into the shops only to find a bug in the ROMs, which forced the recall of all Coupés to have their chips replaced. Also getting some negative press was Atari, whose Taiwanese branch was accused of software piracy – Jack Trameil complained of "time and effort being wasted" in investigating his firm.

The major arrival was *LocoScript PC*, the IBM-compatible version of the PCW's word processor. Its repeated delays had become something of an industry joke, but the program clocked up some serious sales.

The Neo-Geo super console took a step closer to Britain as the newly-appointed UK distributor began to look at possible rental schemes for its potential product.

• Stepping closer to the UK, the Neo-Geo super console

Other headlines:

Official World Cup game kicks off

The first cuckoo of spring...

Survey shows average PC costs £2,200

Prices tumbled throughout the year

MAY

The future of computing took a step towards reality as Philips' CD-I machine was unveiled. This remarkable machine combined an interactive CD player with a computer, to make a multimedia machine capable of superb graphics and sound. The example Philips showed was a golf game where the player and backdrops were real photographs rather than drawings. The truly amazing thing about the CD-I system however was the price – a predicted £700 when it arrives in the UK in 1991.

Another futuristic unit to surface was the Canon all-in-one business machine, the S-2000, which combined a PC, printer, fax machine, answering machine and telephone in one small box.

Rumours began of a notebook Macintosh – an idea which has come closer to fruition since. Another Apple story was the launch of the low-cost Macs – we predicted a modular colour Mac with built-in video, sound

• The Philips CD-I: even the price is right

WAS IT FOR YOU?

input, an Apple II emulator card and a 68020 chip at under £2,000; the LC to a T!

The SAM Coupé made the headlines again when MGT decided to get the users to change the faulty ROM chips rather than doing a factory recall.

Other headlines:

Computers unsafe for critical tasks

An Australian report claimed computers were unreliable.

Data act in court test

The first companies were prosecuted under the Data Protection act.

JUNE

Commodore's CDTV finally surfaced in the summer – but not before a Sanyo CD Amiga prototype had been revealed in Japan. The big news was Miles Gordon Technolgy, maker of the SAM Coupé, going into receivership. The firm was bullish about its chances of selling the SAM, but six months on no buyer has been found.

Sony took miniaturisation to new extremes with the CD-I Entertainment Station – a ghetto-blaster style machine with a colour screen and a CD drive. The CD-ROM Discman was even smaller, fitting comfortably in the palm of your hand. The end of the paper book?

In the PC world Microsoft launched its revolutionary Windows 3, finally removing the 640K memory limit of PCs and allowing multi-tasking. It sold by the thousand.

Atari got itself into a muddle with president Sam Trameil announcing a CD-ST for 1991 at the same time as Atari's UK boss was dismissing the technology as 'immature' and denying a CD-ST would ever exist. Meanwhile a UK importer began to bring in Fujitsu's FM Towns PC with is built-in CD-ROM drives.

Other headlines:

Mad hacker locked up for three months

Nicholas Whiteley became the first hacker to be jailed.

Half UK companies rip off software

Naughty, naughty...

• IBM's PS/1: a trul personal personal computer.

JULY

IBM took the plunge and launched a truly personal personal computer – the PS/1. IBM has a dodgy record when it comes to low-cost machines and the machine was soon slammed for its low-tech specification.

In Japan details of Nintendo's 16-bit Super Famicom leaked – *Express* ran the first UK pictures of the machine. Now an official product, it looks like the console to watch.

Visual Impact

• Atari's TT workstation got a boost to 32MHz.

Atari overtook Commodore in the high tech stakes when it announced a 32MHz version of its TT workstation; not to be outdone Commodore hit back with a 68040 card for the Amiga 3000. The 3000 also took a 90-degree turn to become the tower 3500.

Apple set up spin-off firm General Magic to work on computers with intuitive interfaces. The first product was expected to be the MacSlate; a smart keyboard which could be used as a portable. A machine called the Portable Intelligent Communicator was also forecast.

As the World Cup reached its climax, a psychic Amstrad owner predicted Cameroon's victory over Argentina, and said England would win in an England–Argentina final. The *Express* team were so confident they put some money on at Ladbrokes...

Other headlines:

Flight sim banned over Nazi symbols

WW2 pics in a game's manual upset the Germans.

Give a monkey an Apple Mac and she will read her books

No, we didn't understand it either...

AUGUST

The month for consoles with Commodore releasing its GS C64 console (predicted by *Express* in June) and Amstrad launching the GX4000. Both machines were pitching for the lucrative Christmas market, and both seem to have met with some success.

Also on the scene were the revamped Amstrad CPC range. The 464 Plus and 6128 Plus were hailed as showing 8-bit computers didn't have to be old fashioned and featured improved graphics and a cartridge port.

Commodore unveiled its Amiga package for Christmas; Screen Gems was originally going to contain the *Teenage Mutant Ninja Turtles* game from Mirrorsoft, but rumour had it Nintendo put a stop to that to protect its own Turtles bundle with the Entertainment System.

A bunch of American protesters marched on Lotus to protest at the 'look-and-feel' copyright action. Their chant: "1, 2, 3, 4, kick that lawsuit out the door; 5, 6, 7, 8, innovate don't litigate; 9, A, B, C, interfaces should be free; D, E, F, 0, look-and-feel has got to go!"

Other headlines:

Autodesk gets $2,000,000 from software pirates

One firm took the law into its own hands

Games giant shuns 16-bits

Activision pulls out of the ST and Amiga market

SEPTEMBER

September saw a sad loss for the computing community; the Sinclair Spectrum Plus 3 breathed its last. An equally sad loss (takes out onion) was the demise of *Popular Computing Weekly*, our main rivals for two years.

Amstrad launched new machines at the other end of the market; the PC3000 series (predicted by *Express* back in February). The metal-boxed machines were designed to give Amstrad credibility in the PC world.

An Atari console began to take shape; called the Panther it was predicted to be 16-bit affair rivalling the Sega Megadrive. Another hot rumour – an upgrade to the Amiga 500 – was fuelled by the quiet launch in the States of the Amiga 500 Professional, a 1Mb machine with an upgraded chip set and *Workbench 2*.

On the software side, one of the most eagerly awaited products finally surfaced: *Deluxe Paint ST* set the standard for Atari graphics.

• So then, we say a sad farewell to the Spectrum Plus 3.

Other headlines:

Iraqis steal UK computer secrets

Saddam had access to a coding box of tricks.

London overrun by monsters

The Computer Entertainment Show makes a hit

OCTOBER

The big news of the autumn had our tongues hanging out: the launch of the colour NeXT machines. With both 68040 and i860 processors, built in laser disks and 16

• The Amstrad 464 Plus: proving 8-Bits weren't old fashioned

million colours on the screen, the NeXT machine was truly gobsmacking – and relatively affordable for such an over the top machine.

Much more affordable, but equally desirable in their own way, were the three new Macs. The Classic came in at a fraction under £600, finally bringing the Mac to the masses, the IIsi knocked a grand off the price of a Mac II, but the one we're all saving up for is the LC – a colour Macintosh for around £1,500.

Commodore launched the Amiga 1500; a half-way house between the gamesy A500 and the expensive 2000 aimed at the home business user with a penchant for quality games. Many commentators predicted a Z88-style hand-held from Amstrad in the New Year.

Someone who was definitely working on such a machine was Sir Clive Sinclair, whose latest project involved a PC-compatible hand-held. Also on the PC side, Sega was expected to come out with plans for a PC which could also run Megadrive cartriges!

• *NeXT: is this what a Mac wants to be when it grows up?*

Other headlines

Firm plans CDTV rental scheme
Commodore looking for a High Street link-up.

STE hard disks under threat
Some STEs were incompatible with their hard drives

NOVEMBER

Atari set about producing a major set of upgrades for models in the ST range which had escaped the previous year. The Mega range got a smart new box and a doubled clock speed, while the Stacy portable got the same upgrades as its stationary brother the STE.

Telly addicts got a boost as Sharp and Nintendo combined to produce a TV with the Super Famicom console built in. Philips launched the first of its CD-I range; the consumer models were put back to 1992. More CD delays from Commodore, whose CDTV had been slipping down the release schedule for months.

The US protesters lost out. Paperback settled out of court and agreed to stop making *VP Planner*, a spreadsheet Lotus claimed looked and felt like *1-2-3*.

After the demise of the Plus 3, Spectrum owners got a boost from the news that a Spectrum console was in development; trouble was it was in Russia!

On the games front, Gazza's long overdue return to the computer scene was made with *Gazza!*, which was falsely rumoured to have a Lindisfarne soundtrack.

Other headlines:

Amstrad games PC set for 1991 launch
The PC4000 will rival the ST and Amiga for gaming

Atari two face jail in piracy scandal
The authorities weren't wasting their time after all..

DECEMBER

• *The entry level Mac Classic at under £600.*

Raised eybrows all round as Acorn and Apple tied up a deal to market Acorn's ARM RISC chip which powers the Archimedes. The low power consumption, high performance chip would be ideal to power the new General Magic computer, but no comment from Apple. Queues formed in the States to buy the low-cost Mac Classic. The colour LC shipped ahead of schedule too.

Intel announced a computer made up of thousands of its i860 processors which was breaking all speed records – and a few price barriers as well. A single i860 was enough to give the NeXT a stunning turn of speed, so 2,048 in the Sigma should be something special.

Computer gaming in virtual reality was science fiction until *BattleTech* came along – and the walk-through video game will be in Britain soon.

Which wraps up the computer year; unless of course IBM goes bankrupt between now and the new year. Onwards to 1991 when you can be sure that *Express* will bring you the news as soon as it happens – and weeks before the rest.

Other headlines:

Maggie makes sweet success
We had to get her in somewhere

Toaster pops up
The fourth 'Amiga Video Toaster arrives' story this year

THE YEAR IN GAMES

We've seen a flood of new games; here are some of them listed by the month they were first mentioned in *Express* – some were plans, some previews, others launches. Some still haven't arrived, some probably never will...

JANUARY
Castle Master
Speedball 2
Leisure Suit Larry In Passionate Patti In Pursuit Of Pulsating Pectorals
Pinball Magic
Teenage Mutant Ninja Turtles
CPC Kick Off

FEBRUARY
Defenders Of The Earth
Conflict
The Hunt For Red October
Conqueror
MicroProse Soccer 2
Thomas The Tank Engine
The A-Team
Liverpool FC Soccer
Wipe Out
World Cup Soccer 90
Klax
Imperium
Asterix

MARCH
Last Days Of Doom
Debut
Paradroid '90
Rorke's Drift
Wall Street Wizard
Bloody Kids
Cloud Kingdoms
Chess King 2150
LHX Attack Chopper
Circuit's Edge
Elvira, Mistress Of The Dark
Venus
Grand National
Kid Gloves
Colorado
Dragon's Lair 2
Guns And Butter

APRIL
Yogi's Great Escape
F15 Strike Eagle
Steve Davis Snooker
Defender Of Rome
Where In The World Is Carmen Sandiego?
Escape From Colditz
Nebulous 2
Spy Who Loved Me
Mad Max
Yellowthread Street

MAY
Balance Of The Planet
Atomix
F-19 Stealth Fighter
Apocalypse
Saint Dragon
Big Gun
PGA Tour Golf
Rod Land

JUNE
Advanced Flight Simulator
Power Drift
Herewith The Clues
Yolanda
Search For The King
Sim Earth
Kick Off 2

JULY
Dick Tracy
Cadaver
Street Hockey

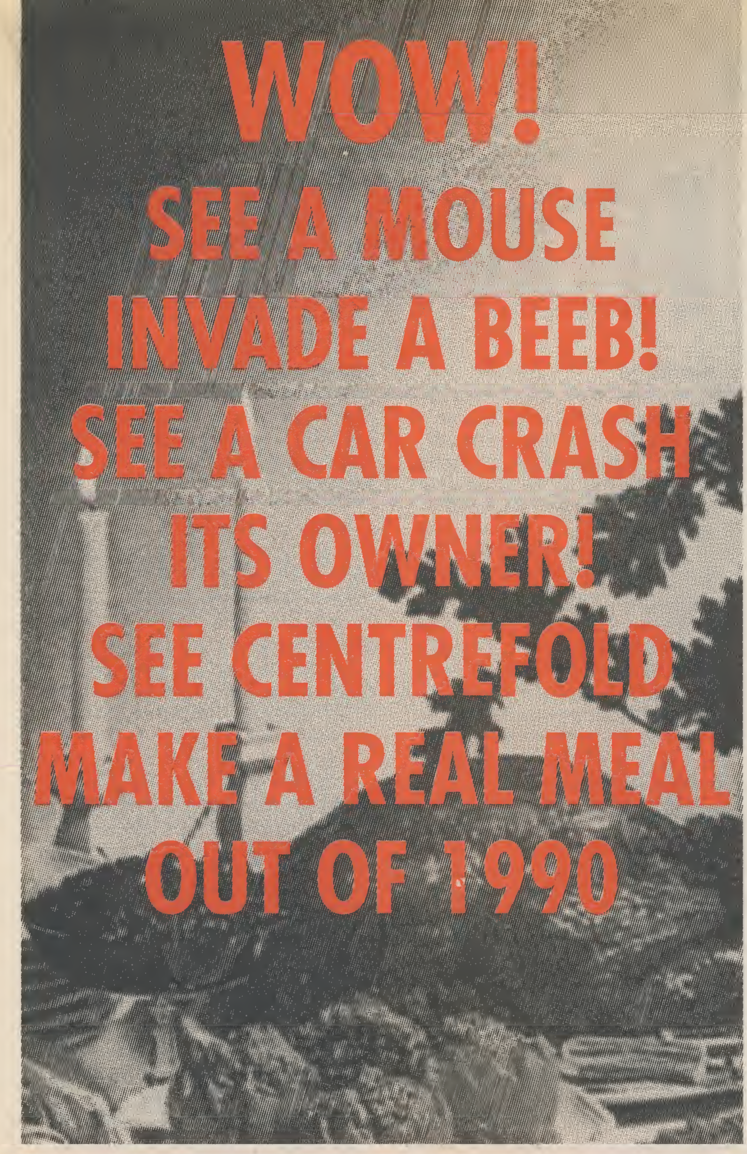
AUGUST
Lotus Turbo Esprit
Buck Rogers
Battle Chess 2
Rogue Trooper
Gremlins 2
Shockwave
Badlands

SEPTEMBER
Powermonger
James Pond
Team Suzuki
Blitzkrieg May 1940
Robin Hood
ATF 2
The Killing Game Show
Godfather
The Simpsons
Defender 2
Wonderland

OCTOBER
Horror Zombies
Brides Of Dracula
Trevor Brookings World Cup Glory
Wizball 2
Tournament Golf
Win A Billion
Wing Commander
The Final Conflict
The Savage Empire
Populous 2
The Amazing Spiderman
Gunship 2000

NOVEMBER
Dr Mario
Rick Dangerous 2
Captive
Match Pairs
Maya
Nine Lives
John Madden Football
4D Sports Driving
Hard Nova
Gazza!
Terminator 2

DECEMBER
Mission Impossible
Narco Police
Sim City 2
Judge Dredd
Vector Championship Run
Robocop 2



Tim Smith's Centrefold... ... not worth reading if you're at all interested in a serious, penetrating over-view of the year's trends and events.

SHOPPING EXPRESS

THE VALUE-PACKED GUIDE TO YOUR MACHINE AND MORE

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Macintosh

MACTRICKS

Here's one for any Classic owners out there: when you start up (or restart) your computer, hold down Command-Option-X-O while you're doing it. You will find that your Mac has booted up using a ROM disk, rather than the normal floppy or hard disk.

It transpires that there's a hidden 'disk' on the Classic's ROMs, of which Apple was at one time intending to make use. It decided not to, but the 'disk' remains hidden in the depths of your machine. Apparently, the initial idea was to allow the Classic to be used as a 'diskless workstation', connected up to a network and not requiring a floppy or hard drive. That's why the ROM disk contains AppleShare.

The practical upshot of this is that if your hard disk crashes, or if you have a floppy-only machine, you can start up the Mac without using a conventional System floppy – and this, of course, makes the single-floppy Macintosh a much more appealing proposition.

Why Command-Option-X-O? Well, during development the Classic was codenamed the XO. Easy, really...

On the same sort of subject, but rather more up-market, here's one for anyone out there who owns a Macintosh IIci. Alter the date (from the Control Panel) to September 20, 1989. Then restart your machine, holding down the Command, Option, c and i keys as you do so. Before your very eyes, a colour picture of the IIci development team will appear on the screen. September 20 1989 was, of course, the date when that machine was launched.

Just in case all you Mac SE owners are feeling left out, here's how to get silly pictures on your machines: Press the 'interrupt' button on the programmer's switch (if you don't know what that is, the information is in your manual; you don't have to be a programmer to have the programmer's switch installed – everyone should have it attached). Then, in the small window which appears on the screen, type the following:

```
G 4 1D89A <return>
```

When you've finished marvelling, to return to normal either press the 'reboot' switch or hit the interrupt switch again and type:

```
SM FA700 A9F4 <return.
PC FA700 <return>
G <return>
```

Apparently there is a similar trick for the Mac Plus. If anyone knows what it is, please drop me a line care of the magazine and let me know, or alternatively e-mail me: I'm 100016,320 on CompuServe, 'iwrigley' on CIX and 'MACPUBLISH' on AppleLink.

MAGIC

A couple of weeks ago David Morgenstern, in his 'Postcard from America', told users how to access the full facilities of *HyperCard 2*, which is being shipped with all the new Macs. But I thought that it's worth re-iterating it here: as shipped, *HyperCard 2* only allows the user access to two of the five levels. To write *HyperCard* programs, you need access to the other three levels; and to gain that access, call up a message box (Command-M), type the word 'magic' and hit return. Hey presto – the other three levels will appear.

CHRISSY PRESSIES

If you've got aged relatives asking what you want for Christmas, here's a book worth getting if you're a computerholic: *The Cuckoo's Egg*, by Clifford Stoll. It

POSTCARD FROM AMERICA

This week, David Morgenstern considers the hot topic (ho ho) of fire, and its effect on your precious data.

"Think you're ready for any data emergency? The utility programs are on the hard drive and floppies, waiting for a failure. Everything is backed up, daring the digital gremlins to do their worst. Believe me, you are not prepared for the worst and most primitive of data disasters – fire.

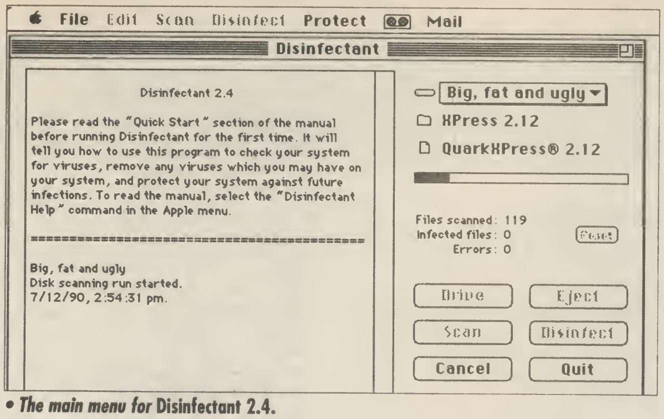
"I recently witnessed a fire at the personnel department of a local university. The entire office was gutted. All their computers and peripherals were destroyed. The fire was blamed on faulty wiring, or is that a new way of describing a cigarette left in a trash bin?

"They made a point of locking up all their employee records every night, but felt their data was safe in desk drawers, and hard drives. Years of correspondence became blackened clumps of trash in minutes. Also lost were data and reports representing thousands of hours of professional analytical work. It's hard for all users, at home, or in the office, to understand that it's the data that's important, not the expensive boxes that give us access to the marvels of software engineering.

"Many safe manufacturers have special models to protect data. They are quite different from paper-fire safes. Paper burns at 190° C. Media safes are rated around 68° C per one hour of fire for large tape data, and 50° C. for cassettes. These safes will work for floppy media as well. There are several models that look like two-drawer filing cabinets.

"Data safes are more expensive than paper models. You absolutely do not want to get-a-deal, and buy an old used safe. Old money safes are worthless for protecting data – they're worthless for protecting money, too. They're meant to keep greedy fingers away from the dough, not fire.

"I spoke to Ken Dunckel, a professional safecracker, about the problem. He said that small numbers of disks can be protected by putting them in a small fire-resistant media container, and placing that in a regular paper safe. He stressed that '80 per cent of businesses that lose their records in a fire never re-open.' Is this a hot tip, or what?



Disinfectant 2.4

Please read the "Quick Start" section of the manual before running Disinfectant for the first time. It will tell you how to use this program to check your system for viruses, remove any viruses which you may have on your system, and protect your system against future infections. To read the manual, select the "Disinfectant Help" command in the Apple menu.

```
================================================
```

Big, fat and ugly
Disk scanning run started.
7/12/90, 2:54:31 pm.

Files scanned: 119
Infected files: 0
Errors: 0

• ***The main menu for* Disinfectant 2.4.**

costs £12.95, and its ISBN is 0 370 31433 6.

It's all about how an American working at a university tracked down a German, working for the KGB, who was hacking into MILNET, a network connecting hundreds of American military computers. This may sound a little dry, but in fact it's fascinating.

If that doesn't sound to your taste, then Volume 3 of *The Macintosh Bible* is now in the shops. It's a must for anyone who's seriously interested in becoming a power user of the Macintosh.

If software's what you want, then get MacLine (081 643 4626) and Camelot (0734 591500) to send you their catalogues. For computer books, try Computer Manuals Limited (021 706 6000). And all pressies for me will be gratefully received.

VIRUS WATCH

A new Macintosh virus has been discovered – there seems to be a new one out every month or so these days. What do these cretins think is so clever about writing a Mac virus? If they have the skill to do that, why the hell don't they do something sensible instead?

The new virus is a variant on ZUC, called ZUC B. Fortunately for the Mac community as a whole, some people don't think that viruses are so great, and a new version of *Disinfectant* has been brought out to combat it. *Disinfectant 2.4* is available from on-line services such as CIX (in the conference 'mac', topic 'files'), and from user groups and other public domain software sources. It's totally free, and rekindles your faith that the vast majority of people have better things to do than cause others trouble. The program is written by a guy call John Norstadt, who works at an American university, and a new version appears a couple of days after any new virus. Give that man a prize!

Ian Wrigley

CPC

6128 PLUS THAT LOADS FROM TAPE

The new Amstrad 6128 Plus scores in a big way over its predecessor with its styling and its ability to play console games – but a minus point is the fact that there's no way to load software from tape!

After all, the old CPC had a jack socket for users who wanted to load games off cassette, even if the machine was disk-based, but the new version doesn't even let users do that. This is a bit of a blow for those who want a disk machine but also want to load the odd budget game.

Well, it's a bit of a tricky way round, but WAVE may well have the answer for those determined to make the most of the 6128 Plus's console capability and the huge range of budget software out there. For the sum of £20, WAVE will convert your new machine to load those tape games – and will even sell you a tape-loading 6128 Plus at the same price as an unmodified version. A pretty decent offer, since WAVE is selling the machines at £25 off the recommended retail price anyway!

But be warned. There are two things you really ought to know if you're interested. The first is that if WAVE converts your machine for you, the manufacturer's warranty will be invalidated. It's only a simple modification and is unlikely to cause any problems, but once the case has been opened you're on your own. The other thing is that even with the modification, you'll only be able to LOAD from tape. For some reason the WAVE technicians haven't yet been able to fathom, you can't SAVE onto tape.

If you're not too worried about your warranty, and absolutely have to be able to load tape software into your 6128 Plus, WAVE is at 1 Buccleuch Street, Barrow-in-Furness, Cumbria LA14 1SR (0229 870000).

MORE DD-I BARGAINS!

I thought we'd seen the last of the frantic price-cutting on Amstrad DD-I drives (they're the ones with the interface for the 464) – after all, existing stocks couldn't last for ever, and Amstrad wasn't making any more. Certainly over the past few weeks it seemed as if prices were on the up again, and the drives getting progressively harder to find.

However, peripherals supplier Microstyle has nevertheless managed to land a few more of the little beasties – and at the amazing price of £69.99 plus £3 postage and packaging! It's back to the days of silly prices again... but not

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for long, as Microstyle only has a certain number of them available at that price.

As ever, Microstyle can be contacted at 212 Dudley Hill Road, Bradford, West Yorkshire BD2 3DF (0274 636652, after 2pm).

DANGEROUS POKE

Rick Dangerous 2 was undeniably one of the year's best games, combining arcade platform action with timing puzzles, hordes of baddies and wicked, wicked gameplay. Now Andy Price from Dunstable has come up with a poke for infinite lives, lasers and bombs for the disk version…

```
1 ◤ Rick Dangerous 2
2 ◤ disc version
3 ◤ by ANDY PRICE
4 ◤ Hi Manish!!
5 ◤
10 DATA 21,00,01,11,00
20 DATA 00,0e,41,df,54
30 DATA 00,21,57,00,22
40 DATA 80,01,c3,00,01
50 DATA 3c,c0,07,21,60
60 DATA 00,22,1c,be,c3
70 DATA 00,be,af,32,c2
80 DATA 85,dd,21,32,91
90 DATA dd,77,00,dd,77
100 DATA 01,dd,77,02,dd
110 DATA 21,d4,96,dd,77
120 DATA 00,dd,77,01,dd
130 DATA 77,02,c3,3e,7a
140 FOR a=&40 TO &80
150 READ x$:x=VAL(_&| +x$)
160 POKE a,x:y=y+x:NEXT
170 IF y<>&175F THEN 200
180 PRINT| press any key|
190 CALL &BB18:CALL &40
200 PRINT| DATA error|
```

Rod Lawton

OFF OF THE CARPET AND ONTO YOUR SCREEN

Hands up all those who've ever played *Subbuteo* football on the living room carpet? I mean, it's not what you'd call a realistic football sim, is it? And if you then think about a computer simulation of that, well, it's a long way from football, isn't it?

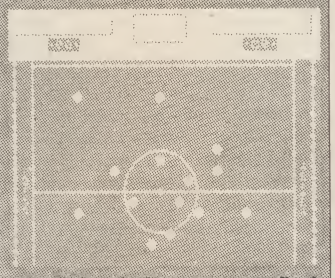
It's not a fact that worried Electronic Zoo, though. The company has gone ahead and turned out a computer version of the game that has you flicking roly-poly footballers into a ball half as big as they are, and trying to get the whole game over with inside a week. And the daft thing is, it really works!

The idea is that you 'flick' your players into the ball, trying to either pass it to another of your players or shoot at the opponent's goal. You keep possession for as long as you can keep hitting the ball when it's your turn, and in the meantime, your opponent is allowed 'defensive flicks' to try and head you off and be in the right position if you make a mistake.

If an opposing player strikes the ball when it's in your possession you get a free kick. Similarly, if any player hits another before hitting the ball it's a foul.

Subbuteo games don't exactly have the same immediacy as other footie sims, but they have a certain tactical appeal to make up for it. *Subbuteo* is as much like snooker as football, and you'll spend plenty of time planning your positional play and 'flick power'.

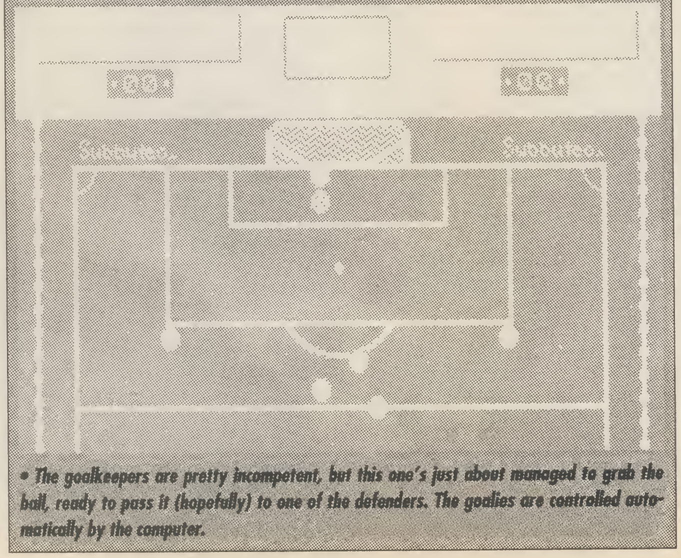
You can even add spin to your flick, for extra tricky shots. Be warned, though, this requires plenty of skill and practice if you're not to miss by a mile.



• Do all those fond memories come flooding back? Subbuteo on the Amstrad looks just like Subbuteo on the living room carpet or the kitchen table.

So far so good, but *Subbuteo* is not without its faults. OK, it looks like snooker on a football pitch, but you can't rely on the same accuracy of control as in snooker. You might think that you've judged the angle on the ball just right to send it off on a tangent, but half the time it just shoots off straight ahead. At other times, you might think you're hitting the ball square, only to have it shooting off at an angle! This, and the difficulty of applying spin with any accuracy, take a fair amount away from the game – otherwise it would be a really good buy.

As it is, *Subbuteo* is entertaining, but not quite accurate enough in its 'physics' to be a real classic.



• The goalkeepers are pretty incompetent, but this one's just about managed to grab the ball, ready to pass it (hopefully) to one of the defenders. The goalies are controlled automatically by the computer.

Amiga

FUN WITH FUN SCHOOL

They say that most people are kids at heart, and I'd certainly agree with that having played Mandarin's new *Fun School 3* series of education programs. OK, educational programs are usually pretty boring, but I must admit that I had a lot of fun with *Fun School 3* (perhaps I even learnt something).

When I first received them I was rather sceptical, but it didn't take long before I was adding numbers with teddy, correcting the sentences with the friendly robot and working out sums by guiding the little onscreen frog across the screen. Maybe I'm as mad a balloon, but I loved every minute of it.

Fun School 3 actually consists of three separate packages, each catering for a specific age range. They consist of six separate educational programs, which are designed to develop skills at your child's own pace. All include beautifully created pictures, stunning animation and exciting digitised sounds which are sure to keep even the most demanding of children interested. What's more, they will also teach your child the basics of computer operation, a skill which has become a necessity in today's world.

For the £30 asking price, they're an absolute bargain which really shouldn't be missed. I recommend them whole heartedly. For more information, phone Mandarin on 0625 878888.

DTP UPDATE

As I exclusively revealed about six months ago, Gold Disk is soon to release version 2.0 of its acclaimed DTP system, *Professional Page*.

Exactly what is new is a bit vague, but I have been assured that the new program has been completely revised making it both look and feel like an entirely new product. The most immediately obvious enhancement is *ProPage*'s user interface – all the gadgets have a *Workbench 2.0*-like bass-relief effect to them, therefore making the whole package that bit more professional.

Features-wise, it seems certain that the new release will support multiple pages. It will also be possible to run text at any angle, therefore allowing you to rotate text boxes. I'll let you know about any more new features as soon as I hear more.

ProPage comes hot on the heels of version 2 of it's main rival, *PageStream*. Version 2 of *PageStream* has been promised (and was indeed previewed at the recent Commodore Show), but UK distributor SDL has still not officially released the product. As soon as I get both new packages, expect an in depth head-to-head review.

Both *PageStream 2* and *Professional Page 2* will be distributed by Silica Distribution (SDL to their friends) which is on 071 309 1111.

COMPLEX GUIDE

The other day I had to drive up to Manchester (which is about 200 miles away from where I live). So I jumped into my faithful fuel-injected jallopy and headed north.

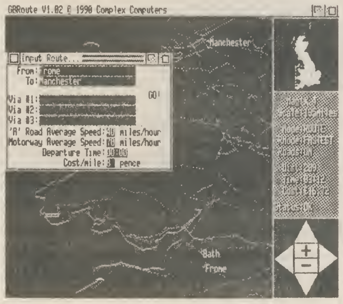
A little over an hour later I came to the conclusion that I was well and truly lost. So I pulled over onto the side of the road and got out my trusty road map. Unfortunately mapreading has never been a great strength of mine, so that didn't help one bit either.

Of course what I needed was *GBRoute*, a brand spanking new journey planner program from Complex Computers. Based on the principles of NextBase's industry-renowned *Autoroute* package (which is only available on the PC and ST), the program promises to guide you from A to B with a minimal amount of fuss and bother.

As PC and ST owners will tell you, *Autoroute* certainly doesn't come cheap (in excess of £100), but Complex Computers has decided to release its journey planner for just £39.95. I'm sure you'll agree, a veritable bargain if ever there was one!

Using the program is pretty straightforward. All you have to do is to select 'New' from the pull down menus and a requester will appear which allows you to type in where you are, where you want to go and any excursions you wish to make along the way. Click on the 'GO' gadget and within seconds *GB Route* draws a map of your entire route.

Calculation speed is one of the factors that makes *GB Route* so special – it takes just four seconds to calculate the route from John O'Groats to Lands End. When I tried the same on the ST version of *AutoRoute*, it actually took over a minute.


GBRoute V1.02 © 1990 Complex Computers

Input Route...

From: rome

To: anchester

Via #1:

Via #2:

Via #3:

'A' Road Average Speed: miles/hour

Motorway Average Speed: miles/hour

Departure Time:

Cost/mile: pence

• ***Never get lost with* GB Route.**

One of the few limitations of *GB Route* is that it only covers major roads such as A-roads and motorways. This won't make too much of a difference on lengthy journeys, but fairly short journeys can actually take longer if you take *GB Route*'s advice. However, Complex Computers claims it is already hard at work on an upgrade that will extend *GB Route*'s coverage to minor roads.

Amiga owning motorists would have to be plain crazy to miss out on this absolute bargain. Complex can be contacted on 0706 224531. Definitely my software choice of 1990!

ENERGETIC VENTURE

I must just give a brief mention to a new disk magazine called *PDEnergy* which is being produced by New Image Software of Dunstable in Bedfordshire. Although the name has been decided, the developers (I suppose that's what you would call them) have yet to decide upon content. OK, there will be the usual news, reviews and PD utilities, but New Image is unsure about exactly what kind of things (both in terms of text-based features and programs) to feature.

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This is where you come in. If you have any great ideas for the kind of material you would like to see on a disk magazine (don't forget, it's not paper-based, so highly illustrative articles aren't going to work), then give New Image a call. Who knows, if you come up with a great idea, they might even put you on their free-subscriptions list.

Contact Gareth on 0582 666680. As soon as the first issue is complete, I'll bring you more news.

Jason Holborn

SAVING INTERPHASE GAMES

The January issue of our sister magazine *Amiga Format* included the complete game *Interphase* from Imageworks. At present you can't save games, but very soon you will be able to using a poke which *Express* will bring you soon. Watch this space for further details or check out the February issue of *Amiga Format*, out on January 10.

Archimedes

BROTHERS IN ARM LTD

The deal between Apple and Acorn to set up a new company, ARM Ltd, to develop new RISC chips sparked a firestorm of speculation. It's good news for Acorn, boosting its credibility and allowing it to focus on the business of building and selling computers.

Acorn has given up a part of its uniqueness, and something that made it a desirable place to work for the bright young boffins. But of course it also frees Acorn from having to pay for the development of new ARM chips: the work will now be 'subsidised' by Apple and the third partner VLSI.

The news sent Acorn shares soaring from 9p to around 25p before slipping back a little. I actually heard someone say they dropped due to 'profit taking': I've never heard that phrase in the same sentence as the word 'Acorn' before. Then again, I also heard someone suggest they could have made a killing. I think not, but a minor injury was just possible.

Mike Newton, managing director of Apple UK, stressed Apple is in it for the money: 'It's a commercial investment', he claimed, convincing only the more credulous listeners. Quite why Apple should bother trying to turn a profit by investing what amounts to petty cash in a chip design company escapes me. A more believable story came via a live video link to the States – from main Apple vice-president Larry Tesler – "We want a line in to this technology." In the past, Apple has opened lines into PostScript by buying a slice of Adobe, and bought database technology along with Sybase. ARM Ltd looks like a similar deal.

The smart money says Apple wants to guide the future development of the ARM chipset, and to use ARM chips in a new ultra-portable computer built by Apple subsidiary General Magic (and rumoured to be called the MacSlate, though it isn't a Macintosh). All the talk at the launch was of the low power needs of the ARM processor – MIPS per watt is the new buzzword (or should that be MI per joule) – and that points to a portable. And General Magic employs Andy Hertzfeld, who helped Radius build its ARM-powered Mac graphics accelerator.

Apple also has a new range of laser printers on the stocks. ARM chips make for very fast yet cheap laser printer controllers. Particularly so since a US company called Bauer Technologies once wrote a PostScript clone for the ARM. Bauer was later

WHO KILLED ULOPA'S PATER?

Do *not* confuse *Twin Worlds* with Twin Peaks. There is no squeaky-voiced Lucy, no log lady, no broken necklace. The best Twin Worlds can manage in that department is a broken amulet and a bunch of extremely strange monsters. It's a fairly standard graphic adventure, though each ground level section has a subterranean 'twin town' too. There are beasties to kill and objects to collect as usual, with magic spells (if I didn't know better I'd say they were coloured tennis balls) to help.

Cute animation of the snub-nosed central character, Ulopa, is one of the primary features of the game. He walks, leaps, crouches and casts the magic spells with a lovely loose-limbed style, and I like the way he skids to a halt if you change direction rapidly. The scenery is good too, in atmospheric shades of ochre and umber.

Another innovative ingredient is the merchant – you'll have to buy items from him in order to proceed more than a little way in the game. He's summoned to you with a flute – nice idea, but the flute should charm the animals too, like Papageno.

• **Twin Worlds: *the archimedes answer to Twin Peaks?***

Once again, this game is a port from a 16-bit machine but is none the worse for it. UBI Soft and Cygnus Software deserve a small pat on the back and a few sales for their efforts.

Twin Worlds will leave you 5p change from £20, and Cygnus is on 0533-559711.

bought up by Microsoft, and Apple and Microsoft have since penned an agreement to share Apple's TrueType font software and Bauer's TrueImage Postscript clone...

It's like the sea innit? Up top, all calm and serene. Underneath, big fish swimming about.

MILES BETTER WITH SHELL

Simtron has hardly been heard of since it originally released *Archway 4GL*. But now comes version two, resplendent on four gaily-coloured discs. It's still a test version, but the real thing should be only a matter of weeks away.

Without a manual, I haven't been able to delve too deeply. But in essence, *Archway* is a shell or skeleton program which you flesh out by adding your own Basic. The skeleton takes care of all the tough stuff – windowing, loading files by dragging icons, displaying Draw files and so on. All you add is the nitty-gritty routines to do the 'real' work.

It doesn't eliminate programming, but it does make it much less of a chore to deal with the 'user interface'. There are pre-packaged routines in the shell to deal with menus, for example, and a special editor to add options to call your own procedures. There are lots of examples to tinker with, and all the tools are built using *Archway* itself.

If you spend a lot of time writing Basic programs, and you want a short-cut to making them work on the desktop, multi-task and transfer data to other applications, Archway could be £100 well spent. Enquire further on 0342-328188.

BACKUP BLUES

There are lots of back-up utilities around, and yet another fell onto the mat recently. *HardBack* from Circle Software (0793-770021) costs £29 and makes a competent job of copying all your files onto a huge pile of floppies. It formats new disks as you go along, splits long files over multiple disks, and does either full or incremental back-ups.

What it doesn't do is compress the files. Fifty-two floppies to backup my 40Mb hard disk does seem a little excessive. I still prefer Beebug's *Backup* software, which keeps a list of file types, and compresses those you mark. It cuts down the number of floppies you have to use by at least a fifth, and doesn't take any extra time.

ALL AT SEA

In your System folder, there are a number of modules – Colours, CLib, FPEmulator and so on. Whenever you get a new application, it's important to keep all the modules up to date. Compare the dates or version numbers of the modules and only keep the latest ones. To check on the version number, double-click on the module and they type *help modules. But one or two problems do crop up. It's important to make sure that you don't use anything too recent – there are copies of the C library later than version 3.5 around for example, and these can stop your software working properly. I've had problems with *First Word Plus* and *Pipedream*, for example, that have been cured by returning to the 'standard' C library version 3.5.

Ken Coumarin

PC

BLINKING OBVIOUS

Blinking on the screen may be effective method for grabbing attention but it's a lousy colour – what's more, if it lasts more than a second or two it drives users up the wall. Much more useful would be a means of replacing the blinking attribute with a new colour. Eight of them in fact. By default the BIOS sets a blink attribute bit to ON when the machine boots up but you can easily turn it off again. For high intensity background colours instead of blinking you need to disable this blink attribute. This extremely curt DEBUG listing will do that very thing.

```
NBLINKOFF.COM
RCX
0B
A
MOV     AH,10
MOV     AL,03
MOV     BL,00
INT     10
MOV     AX,4C00
INT     21

W
Q
```

Save this as an ASCII file called BLINK (the blank line is important). Use a text editor or word processor in non-document mode (or anything you currently use to write batch files). Once written feed it into DEBUG with the following command (on the command line after the prompt - you know how to do it):

```
DEBUG < BLINK
```

Run the resulting file and then try something that used to blink – it should be much calmer now.

Particularly hairy QuickBASIC programmers who have a mouse will find that they often lose the mouse cursor. This is annoying. However, a quick trip to the output screen (use the function key F4) followed by any key to return to QuickBASIC, will find everything hunky-dory once again. In fact, almost any sort of foul up is corrected using this method since QuickBASIC reinitialises just about everything when it comes back from beyond.

CHIP TALK

They just can't seem to stop building whizzy new chips in the States. The latest is deeply shrouded in technical terms: "symetric scalable multiprocessing" and "superscalar architecture" feature prominently in a chip just announced by NexGen of California. Basically it claims to have built a system which contains more than

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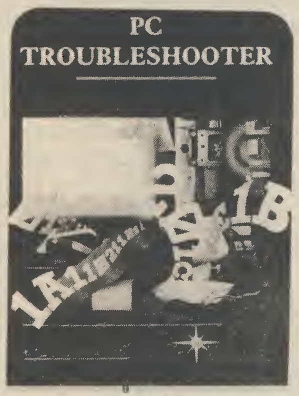
one microprocessor running a program concurrently that will – and this is the intersting bit – run DOS programs unchanged. Present co-processor cards for the PC require special software; adding an i860 to your PC won't speed it up one jot unless you are prepared to rewrite all your programs.

The new chip is in fact a set of chips, and up to four sets can be linked together giving a system with the power of more than double that of a 486. The firm hopes that computers using the system could turn up as early as the beginning of next year.

PROBLEM PCS

We all have problems with our machines from time to time. In fact many of us have problems most of the time. Take my machine for example; the poor little bugger has every kind of software under the sun installed on it for review and dozens of obscure expansion cards have been slotted in and out. After a while the CONFIG.SYS and AUTOEXEC.BAT files look like a battle ground, and inevitably pieces of software clash with another causing spectacular system failures.



• Could this book hold all the answers to your PC headaches?

I think it's a fair bet that your machine has suffered from the same kind of thing, so what can you do about it? The only answer, I'm afraid, is to have a thorough technical grounding in the way the PC works. The most convenient way of getting that is to buy a book.

Ian Sinclair is one of the most prolific of computer book authors, and his latest could just be the volume you are looking for. Entitled *PC Troubleshooter* it claims to hold "remarkably simple solutions" to many PC problems. Because of it's problem-solving nature this is not a book for bedtime reading, but it is a useful reference to have by the side of the machine when it goes bang.

PC Troubleshooter costs £12.95 and is published by Sigma Press, ISBN 1-85058-216-5.

PAPER KEYBOARD

Have you ever filled in one of those magazine questionnaires where you have to tick hundreds of boxes? Tedious aren't they? Well you want to try being on the other end of it. I have several hundred piled up on my desk right now crying 'analyse me'. It's an appaling thought.

What makes it worse is the package which has just turned up on my desk from US firm Datacap; called *Paper Keyboard* it is a system for analysing forms with a scanner. Running under Windows, this software can also read handwriting, as long as it conforms to certain guidelines. Being a Windows program, it can export the data it gathers via DDE linkages.

This all sounds wonderful, but you need to design the forms with *Paper Keyboard* in mind, so it can't help me with the *Express* questionnaire. Maybe next year.

Paper Keyboard costs $895 in the US and you can contact the firm on 914 347-7133.

GOOD SPREAD

Last week's news about the slashing of *SuperCalc* from £400 to £80 is extremely good news for all concerned. PC prices have been unduly inflated for a while now, with ordinary individual users being excluded from the most functional software, even when it's as basic as a spreadsheet or word processor. It's easy to justify the high price of extremely powerful software with multi-user networked interfaces and the like, but for software designed to write letters with prices of half a grand are, well, taking the piss. Let's hope more firms follow Computer Associates' lead.

Stuart Anderton and Steve Patient

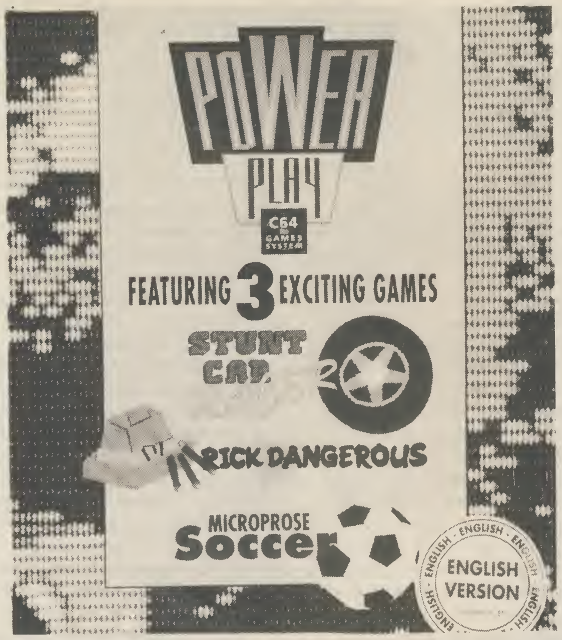
64

SIX INTO TWO WILL GO

Two of the best deals to appear in the last couple of weeks have come from The Disc Company, an American based software outfit with European offices in Paris.It has released two compilation cartridges of games called *Power Pack* and *Fun Pack*, each containing three juicy little titles from times past.

Fun Pack brings together three old CodeMasters titles, *Dizzy's FastFood*, *Pro Skateboard Simulator* and *Pro Tennis Simulator*. There's no question that the combination is a goodie (especially *Dizzy's FastFood* which is marvellously manic) but if I'm not mistaken, the prices at which those titles are still available on cassette form make the value of a £24.95 cartridge just a little suspect. No doubt this will be corrected in due course by the deletion of the games from from the Codies' lists.

No sword of Damocles hangs over the *Power Pack* though, which for once in this ridiculously hyped industry, lives up to its name. *Stunt Car Racer* is top of the bill. In it you play the driver of a fairly robust but by no means indestructible machine which drives around the precariously raised tracks of a the *Stunt Car League*. These tracks, predominantly oval in shape, are twisted, humped and broken by



• The Disk Company, whose European operation is being head up by an ex-chieftain of Microprose France, is backing the new C64 cartridge scene. Three cheers for TDC, please

cavernous drops which make the task of completing a lap enough of a hair-raising prospect without even taking into account the computer controlled devil-driver against whom you compete. Highly playable and demanding.

Microprose Soccer is the mid-field offering and, apart from the fact that a good many GS owners at least will already have Commodore's own *International Soccer*, provides a great addition to your games collection. It comes with 16 teams from which to chose and the option of a two-player game which you'd be a fool not to try.

Completing the line up and saving the best till last in the process is the original arcade adventure starring the man with the hat, *Rick Dangerous*. Like *Fun Play*, the second cart also costs £24.95

THOSE THAT HAVEN'T MADE IT... YET

The way *Total Recall* is going it looks as though Ocean is going to be able to tag a number two onto the title and it might then just get it out in time for the sequel. *Line of Fire*, on that other hand, went in for critical life-saving surgery a couple of weeks ago. A spokesperson for US Gold admitted that the graphics on the 64 were distinctly sub-standard and that a crew of computer graphic artists were going to work for seventy-two hours non-stop to try and rectify the situation. Nothing has been heard since.

I've seen screenshots for the 64 version of *Dick Tracy* but it's too late for this game to cash in on any hype for the movie (unless the video release is imminent). When the game is finally released it will almost surely stand or fall on its own merits.

A BREED APART

Following several assurances on telephone that 'it was in the post' Activision's *Dragon Breed* finally made it on the review desk this week. Licensed from the IREM coin-op original, the game takes the form of a horizontally scrolling shoot-'em-up in which you control the flight of an oriental dragon and its rider.

The dragon kills its foes with either fire from its mouth or a swipe of its tail deftly delivered to any foe in thwocking range. The number and nature of opponents change rapidly as you progress though a tunnel of background graphics in what amounts to a very difficult blast indeed. The end of level dragon fodder is unimpressive early on and I'm unashamed to admit that I can't speak for later levels. You can get your rider to dismount and do untold damage of his own accord though there's no real need to complicate matters early on.

Converting the arcade graphics of the original has inevitably led to some compromises. Most noticeable of these is the dragon itself which is drawn in over a dozen separate sprites to allow it to coil and stretch just as it should. However, this pushes the 64's 1Mhz cpu to the limit and you have to be willing to trade accuracy for severe flicker. Playability doesn't come off any worse for the exchange though.

The game also wins strap-line of the year award: "Take heed it's *Dragon Breed*". No wonder Activision is so close to extinction.

MISSION IMPOSSIBLE?

The gameplay gap couldn't be wider than between the other two games recently sneaked into the office. Ocean's *Narc* is notable for the ease with which it can be completed. The drug-bustin' bash from Manchester is competently programmed in all respects, has some particularly decent front-end graphics and can be finished with eyes closed and both hands tied behind your back. Splash out a tenner at your peril.

Lucasfilm's long awaited *Night Shift* on the other hand will put POKE merchants in great demand when it hits the streets and people clamour for a way of by-passing the time limit or number of lives limitation. In the *Skywalker Ranch*-based spoof, you have to assemble well known Lucasfilm props from components shoved into a very large machine indeed, your future employment being tested by increasingly tough quota requirements. It's a very high quality game indeed but one which is so hard to win that it may suffer in terms of appeal.

Sean Masterson

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BUMPER BARGAINS

Call me an old scrooge if you want but I think compilations can often offer excellent value for money and if I hadn't already bought lumps of coal for all my friends and relatives that's what I'd buy them this Christmas. One particularly good bumper bargain package is *Challengers* from UBI Soft, which comprises six games of a loosely simulation based nature.

You can really feel the quality in all of them with the only slightly dodgy game being *Pro Tennis Tour* and that's a not too bad at all effort at Spectrumising tennis, apparently. The rest are very good indeed though. *Kick Off* on the Spectrum didn't really live up to its 16 bit counterparts but is still a playable enough footy sim that should save you from having to watch Tarby's Christmas Funtime Special over the festive holiday.

Also good is *P47* which you might have missed first time around due to the fact that it doesn't tie in with a film or come with an endorsement from Bob Holness. Shame on you if you haven't got it because it's an addictive if straightforward formula horizontally scrolling shoot-'em-up with the usual load of baddies and add on weapons.

There's another flying game, but this time in a cockpit viewed flight sim with lots of shooting called *Fighter Bomber*. I haven't played this myself but *Your Sinclair* liked it's range of missions and the emphasis on blowing things up.

The best two of the lot though are *Rick Dangerous* and *Carrier Command*. The former's a wizard platform and ladders affair with you controlling an Indiana Jones-type hero. It's great fun and reviewers practically fell over themselves to rave about it a year or so ago when it was first released. *Carrier Command* was my favourite game of last year and it's frightening depth and devilish mix of strategy, simulation and honest to goodness shooting things was truely fab in my opinion.

All in all it's an excellent compendium of some of the better alternative (ie not big name licenses) titles of the last year or so.

PSST...WANNA NEW PLUS 3

The dear old Plus 3 might have popped its clogs a while back but you can still get hold of brand new ones you know.

Microsnips of 37 Seaview Rd, Wallasey, Merseyside L45 4QN. is selling the Plus 3 with a fair few bonus things. For £199 (plus £10 P&P) you get a big box containing some pretty good games – *Pac Land*, *Thunderbirds*, *Pacmania*, *Arcticfox* and *Scramble Spirits*, five blank disks, a hand held LCD game, a non-Amstrad joystick and a cassette lead as well as a Plus 3 of course. That's certainly better than any packages Amstrad ever came up with for the machine.

If you're not worried about getting all the extraneous things Omnidale Supplies (23 Curzon St, Derby, DE1 2ES.) are selling Plus3s for £169.95. A veritable bargain make no mistake about it.

PILES OF POKES II

Last week a nation thrilled to the printing of loads of programming pokes in this column. Here's some more hints of a decidedly technical nature from a chap called Robert J. Baker according to whom all the following seemingly insignificant figures are PEEKS/POKES that work on all Sinclair Speccys and probably Amstrad ones as well:

- 23560 – contains the CODE of the last key pressed (if it was detected by an interrupt), handy for machine code programmers.
- 23561 – is the delay before the keyboard starts repeating and 23562 is the delay between repeats, both in fiftieths of a second.
- 23563/4 – during the DEF_FN evaluation, points to the list of arguments being evaluated (a useful way of passing to machine code an argument list which is fixed in number and type).
- 23606/7 – points to the current ASCII character definitions (Space to Copyright) usually in ROM but can be user defined.
- 23627/8 – is the start of the variables area.
- 23639/40 – is the address of the last data item read.
- You can find the address of any program line by typing:

```
RESTORE n: PRINT PEEK 23639+ 256*
PEEK 23640+1);23658
```

of which perhaps the most useful to the programmer is bit 3, the Caps Lock flag (POKE 23658 with 8 to set Caps Lock and with 0 to clear it);

- 23659 – is the number of lines in the lower screen.
- 23670/1 – is the speed of the random number generator, set by RANDOMIZE. I I 23672/3/4 – is the time (in fiftieths of a second) since the last system reset, or any other event which cleared this counter (such as user programming!)
- 23675/6 – points to the UDG area (usually above the initial RAMTOP but can be switched)
- 23677/8 – are the co-ordinates of the last point PLOTed

Thanks Robert!

Just so you wicked and decidedly rad joystick-waggling types don't feel left out here's some multiface pokes for *Super Hang On*. Much thanks to Mike Goldrick for sending them in! The first poke for each stage gets rid of roadside obstacles and the second figure takes care of the other motorbikes.

Stage One – 47357,201 48803,201
Stage Two – 47108,201 48554,201
Stage Three – 47090,201 48536,201
Stage Four – 47234,201 48680,201

Robin Alway

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BUILD YOUR OWN VIRTUAL REALITY

For some years now Incentive has been known for its development of Freescape, a 3D graphics programming technique that has given the world a series of excellent games, including *Total Eclipse* and *Castle Master*.

Now Freescape is being made available to all. Incentive has created a user-friendly version of the program which enables any ST owner, without knowing the first thing about programming, to create solid moving 3D objects in real time and to explore them as if they were real.

I've seen a prototype of the project, and I have to say it could well be the most exciting software release for the ST of 1990. Using a combination of pull-down menus and button-type icons, it's possible to create a standalone game as complex and entertaining as *Castle Master*.

That, however, is just one application for the software. On my journey home from Incentive's Aldermaston HQ, for instance, I heard on the radio of a project that enables trainee surgeons to simulate operations onscreen, something that *3-D Construction Kit* would be quite capable of handling.

And then there's all this stuff about virtual reality, which I must admit I understand little and care about less. But think about the possibilities! You can sit down and create a game containing dozens upon dozens of locations that features moving 3D objects, puzzles and traps, yet without having to master any programming at all. When you've finished the game it is a standalone program that doesn't need to see *3-D Construction Kit* itself.

Even better, there's no licensing or copyright involved. So you could soon be selling your own complete games! (Actually I tell a teeny weeny fibette there, for when you're creating the game you'll want to impose conditions on certain objects, such as "When this door opens, transport the player to location X." This does involve the merest hintette of programming, something like "If shot, then goto x." It must have been exceptionally lowgrade stuff, though, because even I could follow it quite easily.)

3-D Construction Kit is not due for a while yet – I'd guess it's going to be Easter before it arrives – but when it does it's likely to raise a lot of eyebrows. It's set to cost £39.99.

TV AIM

Did you see the Bitmaps on Motormouth the Saturday before last? I thought they came over fairly well, although to be honest I don't know how much the average 13 year old is able to identify with Mike Montgomery, who looks more like a navvie than a teen idol – where was young gun Eric Matthews when they needed him?

Funny how predictable the coverage was, though, with the career teenage Scouser who was asking the questions inevitably pursuing the "You scallies some kinda boffins or what?" line of interviewing.

EYE OPENER

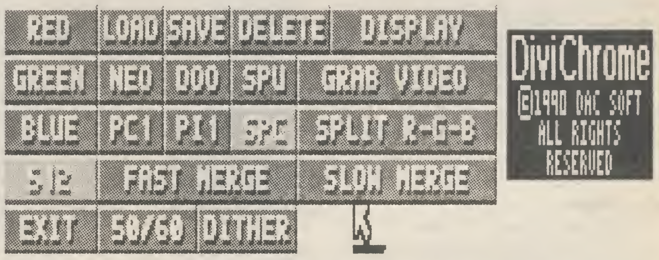
David Crawford has developed what is claimed to be the ultimate colour digitising software for the ST. To use it you will of course still need a video camera, as well as Rombo's excellent Vidi ST digitiser. *Divichrome* costs £19.95 from Dave Crawford, 8/6 Hay Rd, Edinburgh, Scotland EH16 4QA.

A WORD FOR SETH

For the past six months Seth Dashper of Nottingham has been an avid ST follower. Now Christmas is, as he so rightly points out, nearly here, but his chances of receiving a 1040STE are going down the drain.

The reason? Because Seth's parents seem to think that he would sit in front of it, wasting away his brain cells playing games. "So could you please, please please (yawn yawn!) please," he begs, "put in a word or two for me? The thing that seems strange is that why would I want a mono monitor and a printer to kill aliens with?"

Seth does have a point, Seth's parents. In my capacity as a computer expert of the highest calibre, I have to



• The menu screen from Divichrome, which claims to be state of the art ST digitising software.

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say that it is my professional opinion that Seth will grow up psychologically and emotionally stunted if he does not get a 1040STE, if not this Christmas then certainly within the next year.

But to be serious, it is a fact of life that the ST is sold generally as a games machine, though it is capable of much, much more: graphics, education (there are over 200 educational packages for the ST), desktop publishing (I know of more than 20 fanzines and magazines produced solely on the ST) and programming, to name but four non-alien-zapping-related activities.

SETH'S PS

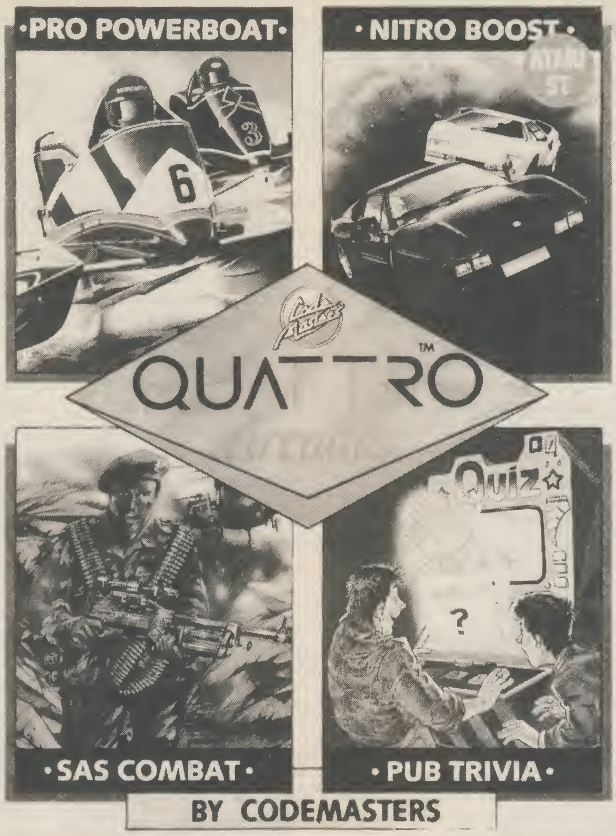
"PS," writes Seth, "Is it possible on a TT to run Windows 3 on AT Speed without having to scroll the screen?" I can answer this question with absolute confidence: I haven't the foggiest idea.

FOURPLAY FOR KIDS

From Codemaster's comes *Quattro Sports* and *Quattro Arcade*, two £12.99 compilations that may just help you sort out those "What prezzie shall I buy?" blues. Or not, depending on how discriminating you are.

Sports includes *BMX Simulator*, *Advance Ski Simulator*, *Pro Tennis Simulator* and *Italia 1990*, the game that gave the lie to the outrageous libel that Codemaster games have a tendency to have Simulator in the title.

Arcade includes *Pro Powerboat Simulator*, *SAS Combat Simulator*, *Pub Trivia Simulator* and *Nitro Boost*, the game that finally nailed the lie that Codemaster games have to have Simulator in the title to get released.



• What a barg! Four games, some of them not even totally crap, for half the price of a single full-price game

Coming soon from Codemaster: the game that gives you the chance to pretend to release a blizzard of games at a few coppers a throw, Codemaster's' *Compilation Simulator Simulator*.

NEW SCANNER

Here's a deserving date for your diary. The weekend of 9 and 10 February 1991 sees a major show organised by Ashurst Computer Club of Skelmersdale, West Lancashire, hoping to raise what organiser Peter Clarke calls an "absolutely obscene amount of money" for the Ormskirk and District General Hospital CAT Scan Appeal.

The Show may be for a good cause but it also promises to be a real value for money experience. Besides a complete MIDI demonstration and explanation session, repeated throughout the Saturday of the show, there's also expected to be various game challenges, including *Leaderboard Golf*, *Kick Off* and *Lotus Esprit*. There's also an unusual consumer test element to the show, with a whole variety of joysticks getting a 24-hour pounding.

Ashurst Computer Club has set itself a huge task, and I'm sure its members would welcome assistance from anyone who feels so inclined. If you live near enough to be able to help this excellent cause, get in touch with organiser Peter Clarke at 11 Heversham, Birch Green, Skelmersdale, West Lancashire WN8 6QQ.

Steve Carey

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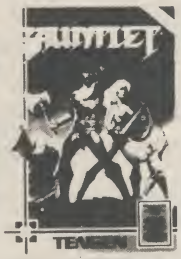

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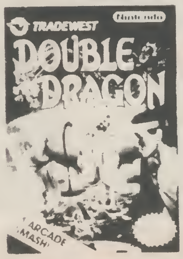

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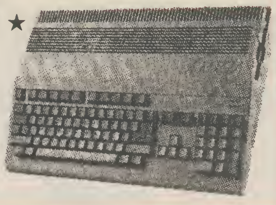

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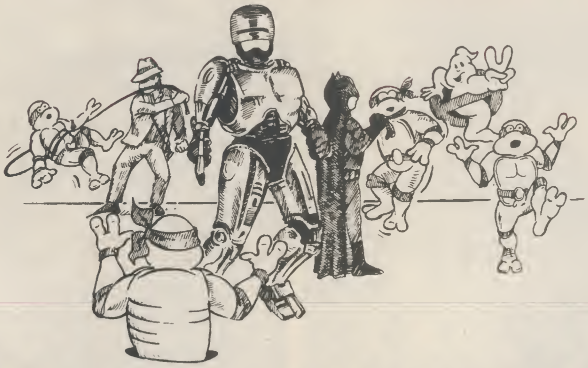

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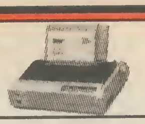

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SD 002 LIFES A BITCH - Another great demo by the lost boys
SD 009 STAR WARS RAP - Great sound mixing and parallax scroll
SD 503 PREDATOR - Brilliant animation taken from the film (D/S)
SD 504 SO WATT - A collection of quality demos from the Carebears (D/S)
SD 505 WHATTAHECK - Another good set of demos from the Carebears (D/S)
SD 506 HARRY MET SALLY - Great demo from the well known cafe orgasm scene (D/S)
SD 507 SWEDISH NEW YEAR - Three demos from different programmers (D/S)
SD 508 CUDDLY DEMO - Brilliant demo with many parts (D/S)
SD 509 UNION DEMO - Another excellent Multi-part demo (D/S, Not STE)
SD 510 GREMLINS DEMO - Collection of pix & samples from the film (D/S)
SD 511 ROBOCOP 2 DEMO - Collection of pix & samples from the film (D/S)
SM 006 TCB TRACKER DEMO 1 - 4 channel sampled music! Who needs Amiga?
SM 007 TCB TRACKER DEMO 2 - Another musical feast. Extra quality on STE
SM 008 THE B.I.G DEMO - Over 50 tunes from the C64. Get this now!
SM 501 BATDANCE - Brilliant! Complete Prince song on 1 disk! (D/S)
SM 506 TEENAGE MUTANT TURTLES - Turtles make it to the ST (D/S, 1 MEG)
SN 500 WALKER DEMO II - The Walker takes Chicago. (D/S, 1MEG)
SN 503 SNOWMAN DEMO - Good animation & music from the film (D/S, 1 MEG)
SN 504 'THE RUN' - Great animation of police chase (D/S, 1 MEG)
SN 505 S.A.M - Animation showing part of the Psycho shower scene
SN 506 DRAGONS LAIR ANIMATION - Digitized from the Laserdisc (D/S, 1 MEG)
SN 507 CALIFORNIA RAISINS - Dancing raisins! (D/S, 1 MEG)
SR 000 ANI ST - Full working version of this excellent animation package
SR 002 VIZ SLIDESHOW - Full of hand-drawn artwork from the comic.

STE ONLY DEMOS (ALL STE disks are DOUBLE SIDED, 1/2 MEG unless stated)

ED 001 THE STE DEMO - One of the first demos to use Stereo sound
ED 002 BOING STE - Featuring a Big bouncing ball (1MEG)
ED 003 AN COOL STE DEMO - 4096 cols, Hardware scroll, Stereo FX (1 MEG)
ED 004 3D SCROLLER - Shows what the STE's blitter can do! (1 MEG)
ED 005 JUNGLE DEMO - Great graphics and Stereo sound effects!
ED 006 PSYCADELIK HOUSE - No, not a spelling error, it's ACIIID!
ED 007 DELIRIOUS - Excellent! 6 different demos to play with.

GAMES (All supplied on SINGLE SIDED disks unless otherwise stated)

SG 500 STAR TREK - The next generation - a brilliant strategy game (D/S) (1 MEG)
SD 005 DIE ALIEN BLOB - A good scrolling shoot-em-up
SG 006 FLOYD THE DROID - Good game with funny sampled sounds
SG 007 NAVEL BATTLE - A good version of the classic battleships game
SG 008 VIRUS - Save your computer from the lurking virus! (NOT STE)
SG 009 EMPIRE - Buy & sell properties to battle your way to the top!
SG 010 HAUNTED HOUSE - A fairly standard (But playable) platform game
SG 011 ZOG - Little brainpower required here! Blast everything!!!
SG 012 JOUST - Brilliant game. Try and dismount your opponents!!
SG 013 FUZZBALL - A good platform game
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HYPERCARD FOR IIGS

After months of waiting, Apple IIGS users have been rewarded with their first glimpse of *HyperCard* for their machine. The package – which ships after Christmas for $99 in the US – was unveiled at the Applefest conference held in Long Beach, California, at the end of November.

Like *HyperCard* for the Apple Mac, *HyperCard IIGS* operates in a similar fashion to a set of index cards. Users store information in documents called stacks, which are made up of individual units called cards. Cards can contain text, graphics, scanned images, and even sound. Buttons on the cards are then used to link cards and stacks.

According to Apple, *HyperCard IIGS* is based on the Macintosh *HyperCard* version 1.2.5, with enhancements to take advantage of the IIGS' colour capabilities. The package requires an Apple IIGS with at least 1.5Mb of RAM (2Mb is recommended), system software 504 or higher, a single 800K disk drive and a hard disk drive or connection to a network.

Although only small quantities of the IIGS were sold in the UK prior to the introduction on the Mac in the mid-80s, the machine has sold steadily since, especially to Apple II users wanting to trade up using add-in cards. *HyperCard* is bound to appeal to these users.

CHEAP WORDFLAIR UPGRADE

Goldleaf Publishing has launched a major new version of its *Wordflair* word processing software for the Atari ST. Called *Wordflair II*, the $150 package is receiving excellent reviews by the Atari on-line magazine trade, pending shipment in early January.

From now until February 15 the Californian software house is allowing users of several competing word processing packages – including GST's *1st Word Plus*, Neocept's *Wordup* and Timeworks' *Wordwriter ST* – the chance to upgrade to *Wordflair II* for half price.

In order to qualify for the offer price, ST users must send their original disk(s) and a $75 cheque to: Goldleaf Publishing, 700 Larkspur Landing Circle, Larkspur, Californian 94939, United States. Further details on 0101-415-461-4552.

MAXWELL'S EXPOSE

Maxwell Computer Products Unlimited (CPU) has unveiled *Exposé*, a desk accessory for the Atari ST for desktop publishing users. The $39.95 package allows graphic files to be viewed from a GEM window. Other features include the creation, saving and loading of notepad files to and from external software running in the foreground.

According to the Colorado-based company, *Exposé* occupies 150K of RAM, and so requires at least 1Mb of RAM to run other programs effectively.

Two versions of *Expose* are supplied on disk by Maxwell CPU – Mono for hi-res monochrome monitors; and Colour for medium-res colour monitors.

Contact: Maxwell CPU, 2124 West Centennial Drive, Louisville, Colorado 80027. Tel: 0101-303-666-7754.

VIDEO TOASTER

Newtek's Video Toaster multimedia system for the Amiga is gaining a lot of attention in the Amiga magazines, but the cost of adding a time-based corrector to the Toaster plus Amiga ensemble is putting a number of potential buyers off the system.

Which is where Vision Quest comes into the frame. The Arizona-based company has come up with a $1,200 dual time-based corrector for the Video Toaster. The unit allows cameras lacking sync facilities and semi-professional VCRs to be linked to the Amiga without the usual frame jitter problems. Future software upgrades will include software correction of colour and automatic resolution enhancement of inputs and outputs, the company says.

Interested? Contact Don Kennedy of the company at Vision Quest Systems, 2925 Sunny Lane, Fayetteville, Arizona 72703, United States. Tel: 0101-501-253-5264.

MODEM/FAX UNITS FOR ST

PC fax card units that double up as ordinary modems for PCs are nothing new, but how about a modem for the Atari ST that does all this? Joppa Software Development is selling the Joppa SF01 and SF02, two packages that do just that – emulate a fax machine, while featuring a standard modem as well.

The SF01 retails for $169.95 and supports all modem speeds between 300 and 2,400 bps, as well as 2,400 and 4,800 bps fax tones. The SF02 costs $229.95 and supports all the facilities of the SF01 as well as 9,600 bps fax tones.

It's worth noting that these units do not support 300bps and 1,200/75 bps UK (CCITT) tones, and that they (ahem) are unapproved for use on the BT networks. Still, at the price, who cares?

Contact: Joppa Software Development, PO Box 226, Joppa, Maryland 21085, United States.

MAC PASSWORD SECURITY

Authenticator, from Eclectic Associates, is a password security system for the Apple Mac. It prompts for a user name and password and denies further access to the user until a valid combination has been entered.

According to Eclectic, *Authenticator* was designed for Harvard's Graduate School of Design and is licensed by Eclectic Associates from Harvard University. The software is designed to support both single and multiple users on a single Mac or a network and will handle authorisation failures by shutting down the Macintosh or by remaining on but denying access to the user.

Contact David Kovar at Eclectic Associates on 0101-617-643-3373.

GRIP THOSE STICKS

One of the problems with joysticks and their table clamps is that they always come adrift, as the power of the human hand is so great. But help is at hand courtesy of Duggan Dezign of Warwick, Rhode Island, in the US. The company has released an interesting device called the Stick Gripper.

Costing $19.95, you place the gripper under your knees while you sit at the table with the joystick clamped to the top plate. Then, no matter how hard you pull on the joystick, your knees give the plate an added element of stability.

It may sound odd, but it does allow you to hold the joystick with both hands and – according to several on-line reviews I've read – is very easy to use.

Contact: Duggan Dezign, 300 Quaker Lane, Suite 7, Warwick, RI 02886, United States. Tel: 0101-401-823-8073 or fax: 0101-401-826-0140.

UPGRADE FOR SUPERCHARGER

Beta Systems of Frankfurt in West Germany has announced a 286 upgrade to the Supercharger MS-DOS emulation system for the Atari ST. Pricing on the SC Plus/286 expansion kit has yet to be announced, but is expected to be competitive.

The new SC Plus 286 expansion turns the Supercharger into a PC-AT-compatible, courtesy of a 12MHz 80286 microprocessor and support chips. A key feature of the expansion system is it has two AT-style expansion slots, allowing real PC expansion cards to be used on the Atari ST! An optional 386SX-based upgrade is also in the pipeline.

Shipment of both the 286 system, as well as the 386SX card, is expected some time early next year.

The company can be contacted at Beta Systems, Staufenstrasse 42, 6000 Frankfurt, West Germany.

STAR WARS ON NINTENDO

Nintendo's Entertainment System (NES) has got a boost (not that it needed one) with the news that Lucas Arts Entertainment and JVC are pooling resources to develop and publish games cartridges for the NES.

First fruits of the partnership will be a cartridge based on the *Star Wars* trilogy which is due to ship early next year. Lucasfilm will handle the design and marketing, while JVC will be responsible for the sales and distribution. ■

ATARI GERMANY SLASHES TT PRICES

Atari's West German operation – a big seller when it comes to STs – has slashed the prices of its 32MHz TT machines.

According to Ron Kovacs' Z-Net newswire, the cuts have been made in response to seasonal shortages in the Mega ST2 and ST4 series in West Germany. These prices include a 40Mb hard disk as part of the package, but not the monitor, reports Z-Net:

Atari TT with 8 Mb	DM5,298	(£1,900)
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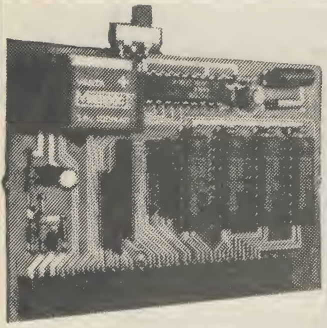

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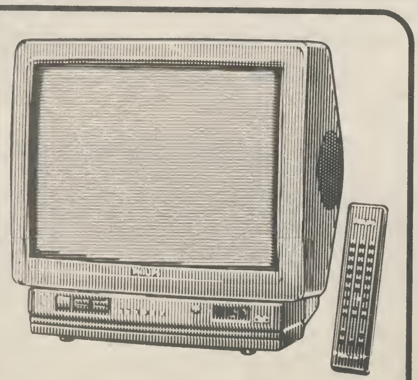

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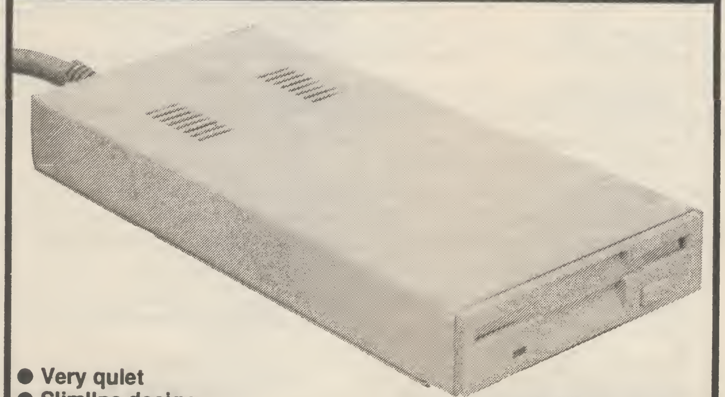

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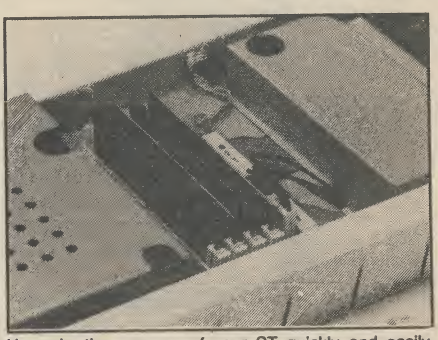

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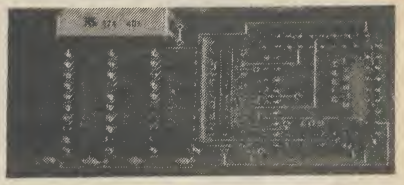

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LOOPS IN REALITY

This week, Mary Branscombe looks at looping the loop.

Loops seem quite straightforward, if you will excuse the pun. Unfortunately many languages implement them in a way which defies logic, so the theory frequently fails to match the practice. Older languages provide only the primitive commands with which to construct loops, while modern languages may offer a more generalised construct that can be adapted, or include the most common types of loop – leaving more esoteric constructions to the user.

Conditional transfer loops, where the loop terminates on the successful evaluation of a condition, are more complicated than enumerated loops, especially in early languages, because both a condition and a transfer instruction have to be composed. Early versions of Fortran and BASIC allowed the programmer to construct conditional loops from conditional and unconditional transfer commands. In Fortran:

```
1   CONTINUE
      pre-exit-point commands
    IF condition GOTO 2
      post-exit-point instructions
    GOTO 1
2     rest of program
```

The CONTINUE statement is not completely necessary, but serves as a useful marker to show the beginning of the loop. The contents of the loop are divided into: the commands to be carried out before the exit point of the loop, the exit condition (which is tested each time around the loop), and the commands to be obeyed in that iteration if the condition does not succeed, followed by GOTO 1 which transfers control back to the beginning of the loop (labelled 1). GOTO 2 will be called if the exit condition succeeds and the loop terminates; control will then be transferred to the rest of the program.

This form of loop is common to all languages with direct transfer instructions. It can be specialised to create loops with exit points at the start or end, and generalised to create loops with multiple exit points. The same loop in 8088/6 assembly language would be:

```
loop:    pre-exit-point instructions
    cmp al,10h
    jeq lpend
         post-exit-point instructions
    jmp loop
lpend:   rest of program
```

The commands to be carried out before and after the exit condition are the same as in the previous example. The beginning of the loop is marked, here with the label **loop**. The main difference between the two loops is that in assembly language, the conditional transfer out of the loop is formed from a number of instructions. Most machines have a condition code register set according to the result of the last instruction; if the result of this is zero, a zero flag or bit will be set that can be referenced by subsequent commands.

The condition code register is used by conditional transfer instructions such as **jeq label** (**j**ump on **eq**ual to zero to code marked by **label**), which will transfer control to the labelled instruction only if the zero condition bit is set; in other words, control will be transferred to the labelled command if the result of the last operation was zero. The **cmp al,10h** command subtracts the contents of the **al** register from the value **10h**. If the **al** register reaches **10h** then the zero bit will be set.

This will result in the conditional transfer instruction **jeq lpend** transferring control to the instruction labelled **lpend** (loop **end**) which marks the beginning of the rest of the program. Thus these two instructions form the exit condition and transfer of control. After the *post-exit-point commands* control is transferred back to the beginning of the loop by **jmp loop** (**jump** to instruction labelled with **loop**).

Ada, TurboBASIC/PowerBASIC or QuickBASIC provide a general conditional loop which doesn't require a GOTO instruction. In Ada, this has the form:

```
LOOP
    pre-exit-point commands
EXIT WHEN condition
    post-exit-point conditions
END LOOP
```

in Quick and PowerBASIC this would be

```
DO
    pre-exit-point commands
IF condition THEN EXIT LOOP
    post-exit-point conditions
LOOP
```

Modula 2 provides LOOP, END and EXIT constructs which have a similar effect. If the language does not offer these constructs (as in Pascal which offers only the WHILE and UNTIL loops discussed last week), then they can be constructed using GOTO to transfer control to a labelled point in the program, in conjunction with a conditional selection.

C provides a WHILE loop of the form:

```
WHILE (condition)
{
    list of commands
}
```

but the UNTIL loop is just a variant of the WHILE loop:

```
DO
{
    list of instructions
}
WHILE (condition)
```

Most languages provide a simple FOR. . .NEXT loop for enumeration loops, but in assembly language, the loop must be built up out of primitive commands using an explicit counter and test. The FOR loop in BASIC:

```
FOR i=start TO end
    list of commands
NEXT i
```

is rather more complex in 8088/86 assembly language:

```
    mov al,start
loop:     list of commands
    inc al
    cmp al,end
    jle loop
```

- **The standard constructions for loops may be fully implemented in a language, or they may be built up from primitives.**
- **A loop construction may be built up in a different way according to the language used, but the control flow will be the same.**
- **Some languages may offer specialized commands that can be efficient, but they will be complex and may cause problems to the unwary.**

The **al** register is used as the loop counter in this example and **mov al,start** initialises the contents of the register to the value **start**. The label **loop** marks the beginning of the loop and the **inc al** instruction increments the value in the **al** register by one each time around the loop. The exit condition is tested by **cmp al,end** which compares the contents of the **al** register with the value of **end**. If the values are not the same **jle loop** transfers control to the instructions labelled with **loop**; **jle** is jump when less or equal and uses the result of the **cmp** command. A more efficient, but rather more obscure, enumeration loop can be written in 8088/86 assembly language using the 'decrement' and test **loop** *label* instruction which decreases the **cx** register and branches by stages to *label* if the result is greater than zero. The enumeration loop becomes:

```
    mov cx,count
start:   list of commands
    loop start.
```

The value of **count**, which corresponds to the number of enumerations required, is transferred to the **cx** register by **mov cx,count**. The loop is labelled with **start** and the **loop start** instruction automatically decrements the value in **cx** each time round the loop and the loop terminates when the value in **cx** is zero.

Higher level languages offer broadly similar constructs for enumeration loops. The DO loop in Fortran:

```
    DO 1 i=1,10
    list of commands
1   CONTINUE
```

is virtually identical to the loop in Pascal:

```
FOR i:= 1 TO 10 DO
    BEGIN
        list of commands
    END
```

and the same loop in BASIC is even simpler:

```
FOR i=1 TO 10
    list of commands
NEXT i
```

The FOR construct in C is usually FOR(*expression1;expression2;expression3*), where *expression1* is the initialisation performed once, at the start of the loop, *expression2* the test condition which must be true for iteration to continue and *expression3* is the increment expression performed at the end of each loop. Hence:

```
FOR(exp1;exp2;exp3)
{
    list of commands
}
is equivalent to
exp1;
while (exp2)
 {
    list of commands;
    exp3
 }
```

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OPENING TIME

Christmas? Humbug! Last year I was visited by three pompous shades; the ghost of computing past, the ghost of computing present, and the ghost of computing future. They were all self-obsessed, and due to a timing cock-up they all appeared at once.

Past bickered with Present about the growth of personal computing: "It's turned a pure, powerful machine into tiny, penny-anny plastic things which play games and beep. It's a travesty." The spirit opined, "I recall the days when hardwiring was a man's job. When a computer could fill the dining room at Buckingham Palace. When you wouldn't mistake a computer for a piece of desk decoration."

Present was a schizophrenic chap. On the one hand it simply wouldn't believe that Future could exist. On the other it worshipped it for what it believed were going to be:

"400Mb internal hard drives the size of 5p bits, 3D colour screens, direct human-computer interfacing, and self-designing systems."

The ghost of computing's future was embargoed by several companies and so could not comment on anything other than to say: "Off the record I would like to make it clear that any advances will be made with the interest of the end-user at the forefront."

It was only after I had closed the curtains around the Zenith auto-four-poster human/sleep interface unit and dropped off to kip that they remembered what it was they were there for and attempted to communicate some facts about themselves. Here, in boiled-down form, is what they said:

PAST: "Computing is not a business for the man in the street. It should be carefully controlled by serious minded professionals and people who know how to control the power."

PRESENT: "My computer is better than your computer. Computing is a free-spirit which should be taught to children at an early age and which should only be wreathed in confusing mists when people start to understand it."

FUTURE: "No comment. Off the record, computing is rather common-place actually. In fact it has moved into two distinct realms; philosophy and practical use."

With that I kicked them all out and got back to reading my *Turbo Pascal for Extremely Clever People* guide.

So, happy Christmas to you all. Don't believe the hype and refrain from returning to this column bleating about being given a copy of *Teenage Mutant Ninja Turtles* by your aunty Meg.

Tim Smith's CEN

Write to 30 Monmouth Street, Bath BA1 2BW (if you dare)

THAT WAS THE BEGINNING
NEW DECADE THAT WAS

The year is very nearly dead and gone. What did it bring us in terms of wacky on-the-cutting-edge, computing goodies? Of course *Express* was there to report it all in full and with its usual brand of incisive, cool, intelligent, astute, insightful, informed, unequalled, unparalleled, dynamic, rough, tough, stylish, up-front, timely, manner. In fact *New Computer Express* managed to make it to the end of the year as the only computer weekly, newsstand title. And what did it have to report? Read on:

THE JOKER IS A VIRUS AND BATMAN IS THE ANTIDOTE (*EXPRESS* 61)

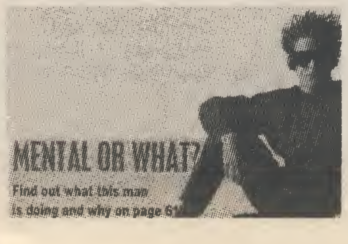
We reported that a new comic book entitled *Batman: Digital Justice* was to be launched. Not only was the graphic novel, (*buzzwords for the 1990s or what?*) set in a computer, all the characters were produced using a Macintosh as well. The headline for the piece should tell you what the story was about. But just in case it doesn't, Batman played the antidote to a virus and the virus was the joker. We were right as well - it's published by DC Comics at £15.95 in our local Waterstones.

CHESS MAN LOSES AT LAST (*EXPRESS* 61)

Not Carl Chessman the notorious American murderer but international chess grand master David Levy who lost to Deep Thought – not the computer from *The Hitchhiker's Guide to the Galaxy* but the dedicated chess playing computer. Deepie beat Levy in four straight games.

WANTED: CYBER BUSINESS MAN (*EXPRESS* 62)

British businesses had finally woken up to the fact that a computer literate manager was more useful than a golf literate one. Well, tell us something we didn't know.



WE'VE MADE SOME MISTAKES, SAYS GLOOMY OLIVETTI (*EXPRESS* 62)

See the last line of the previous story.

A brief break from the heady news section with editorial assistant Dave Golder's year In full:

1) Freezing at Knebworth. (*Well that's interesting*)
2) Freezing at an All Formats Fair. (*What? A computer reference?*)
3) Freezing at Bracknell railway station. (*That's better*)
4) Freezing on the M4 when my car broke down. (*Oh woe is thee*)
5) Being uncomfortably hot at Orlando airport. (*Oooh really?*)

And now we return to our scheduled programming . . .

CALLED OFF (*EXPRESS* 64)

One of the world's most sophisticated computers, at AT&T's huge software centre, hung up on several million American computer users. Er... reach out America?

C5 ALIVE (*EXPRESS* 65)

Ex-doyen of the UK computer scene, Sir Clive Sinclair, was thinking of launching a follow-up to his much maligned C5. The C15 'up-grade' was to have a staggering 20 mile range which is more than you can say for a Spectrum. (See also *Express* 98)

GAME ON (*EXPRESS* 66)

"London played Manchester in a live darts match last week – and neither side left home." Yes it was all too horrifyingly true. Computing for the professionally obese became a reality with two modem linked, computerised dartboards.

PROGRAM CAN BEAT SPORTS CHEATS (*EXPRESS* 67)

Drug taking weightlifter Ricky Chaplin got his picture in *Express* under the a story about a PC program which analyses the performances of athletes and looks for anomalies.

THOMAS GETS TANKED UP (*EXPRESS* 68)

COMPUTER EXPRESS
AUTUMN LAUNCH FOR CPC TRIO

Yes, yes, Thomas the Tank Engine made a mad dash away from Ringo Starr in an attempt to avoid tedious stories about Hamburg, the Cavern and Babs Bach. Tough Tommy steamed – but not as steamed as (*sorry, that's been censored – Sub*) onto the software scene. He got as far as Alternative and begged to be turned into a computer game.

ALL RIGHT THEN WE'LL MENTION THEM (*EXPRESS* 71)

Dominic Wheatley and Mark Strachan of Domark fame appeared in this issue dressed as a knight in armour and a damsel in distress. Well done lads.

COMPUTER DINNER (*EXPRESS* 71)

Boffins at Georgia Technical College – in America that is – developed a computer called Julia which acted the perfect hostess. You programmed the favourite and most hated foods of your guests into the machine and Jules came up with the menu.

VIRUS FOR SALE (*EXPRESS* 76)

American hacking magazine *2600* came up with the zany idea of giving away the decompiled source code for the infamous Worm virus which ploughed through the Internet computer system.

TRAVEL BY MICRO (*EXPRESS* 77)

New "hole in the wall machines" were being mooted as possible ways of booking airline tickets. Birmingham-based Holiday Now were to place seven such magic ticket machines around the country. If you saw one, or even better if you used one, please write in and tell us.

NTREFOLD

ING OF A S

COMPUTER VERDICT ON UNFIT DRIVERS
(*EXPRESS* 77)

Cars would soon come equipped with computers which could assess whether naughty drivers had imbibed one Babysham too many. In the event that a tipsy driver attempted to start his, or her, car the computer would go all thin-lipped, clamp on the brakes and absolutely refuse to budge.

GET THE DRIFT
(*EXPRESS* 78)

Zuk on that! Zuk, a virus which caused cursors to move diagonally across the screen appeared on Macintosh computers. It was spotted gliding around Italy in true Bagio style.

A PEEK AT THE CYBER FUTURE
(*EXPRESS* 78)

McKinley Conway, a 'futurist', let the world know what his predictions were for the 21st Century. Highlights included:

- Computerised motorways with cars driven by robots. (*Someone is currently writing a program which randomly repeats the three phrases "Are we there yet?", "Want to go for a pee-pee" and "Waaa! Bobby keeps pinching me" which can be played from the back seat.*)
- Direct links between the human brain and computers would allow for the upload of a person's dying thoughts. (*Such as "Oww what is this cable doing sticking out of my head?*)
- Strict government birth control programs with penalties for families who have too many children. (*This is not thought to have the full backing of VaticanSoft.*)

Yet another intermission. This time it's from the boss man. Andy editor with five memorable points in his 1990.
1) My first trip into virtual reality at the 1990 computer graphics show.
2) The prominence of black rap-house-hip-hop-funk as the premier sound.
3) New-age hippies, who didn't have to live through the damn seventies in the first place, proving that originality is the scarcest commodity on the market. And I thought Mancunians were sharp.
4) Working with the greatest con-man ever born.
5) The year in which multimedia not only became possible but passé too
And now we return to our scheduled programming . . .

This time we have a message from our production editor Julie Tolley:
1) Learning the difference between logical memory and physical... er what was that word again?
2) Tim giving me my own Intel chip.
3) *Quark Xpress 3* – getting through the learning curve.
4) Maggie getting kicked out.
5) Moving one year nearer to being 30!
And now we return to our scheduled programming . . .

COMMENT
(*EXPRESS* 79)

Do you remember the old *Express* Comment pages? Well one of them was a true classic and this is what the call-out on page 7 said in relation to the Robot Olympics: "What will pass for a sex-test among the cyber competitors is something which defies speculation."

ATARI FOUNDER JOINS COMMODORE
(*EXPRESS* 80)

In what can only be seen as a gallant attempt to put a stop to the petulant "My computer is better than yours" argument Nolan Bushell, the man who founded Atari went over to Commodore as manager of computer interactive products.

COMPUTERISED ID TAG WARDS OFF THE BABYNAPPERS
(*EXPRESS* 81)

Not just the longest headline in the history of *Express* but a really important story too. All you had to was staple a microchip to your infant child, connect a wire to the chip and bingo, anyone attempting to steal your little poppit from outside a store was blown up by a small explosive charge in the chip. (*NB One of the stories in this blast from the past rundown is not strictly true. Can you guess which one?*)

GAMER OVER
(*EXPRESS* 82)

Convicted murderer Leonard Laws was executed by lethal injection after a hearty breakfast and a few hours playing with his Nintendo. Of course this was in the United States, they don't have Nintendos in UK prisons yet.

JUST ONE MENTION FOR HIM...
(*EXPRESS* 83)

Yes, another 'industry figure' dressed stupidly this year, so the Domark's are not the only ones. Luther De Galle of Electrocoin decided to get himself all dolled up as a Roman soldier in order to push the coinop conversion of *Time Soldiers*.

NEURAL NETWORKS ON THE NOSE
(*EXPRESS* 84)

Back to *Express*' hooter fixation with a story about Warwick University's artifically intelligent computer which had been 'trained' to identify five different types of alcohol by smell. Sadly, it turned out that the machine was to be trained not as a wine buff – but as a food freshness inspector.

COMPUTERISED COACH ANALYSES SOCCER SKILLS
(*EXPRESS* 84)

Two Liverpudlian scientists explained to us all the reason why Liverpool FC has actually not stopped winning for the last 2,000 years. The two researchers had developed a computer which could be used to expose a footballer's weaknesses. It could also predict the patterns of play to produce the best results. The machine was not called Ooor Kenny.

IT'S LISA WITH AN AAAAH...
(*EXPRESS* 85)

Consumer culture or what? Apple decided to bury 2,700 Lisas in a landfill outside its Logan, California office. The company had not been offered enough money by a salvage firm. Seems a bit off when there are third world countries like Luxemburg with only one Lisa for the population of seven.

NELSON'S TAPE
(*EXPRESS* 86)

A planned ticker-tape welcome for recently freed Nelson Mandela was nearly abandoned in New York. This had nothing to do with objections from the KKK and more because business were using more computers than ticker-tape machines; ergo no tape. Instead the NY authorities had to import 150 miles of paper ribbon.

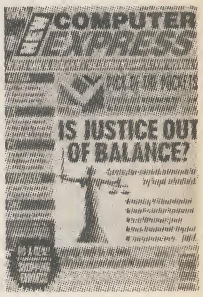
We will now take a short intermission to bring you *Express*' darling of the techie world Keith Pomfret's Top Five events of this year.
1) Breakfast at the Ritz. (*Yummy*).
2) Lunch at Acorn. (*Yeutch, pizza*).
3) Afternoon Tea at BAFTA. (*Acorn again ... no food*).
4) High Tea at the CES. (*Did I really eat flacid hot dogs*).
5) Dinner in Leningrad. (*Sturgeon really is quite scrummy. So's caviar...*)
And now we return to our scheduled programming . . .

This time you get to hear from art assistant Matthew Williams:
1) Betty Davis died. (*There's going to be computer ref soon.*)
2) I left college, Thatcher resigned. (*Politics, politics.*)
3) Cheap Macs launched. (*Ah there we go, a computer name-check!*)
4) Unification of Germany. (*And a dodgy free kick.*)
5) Ceacesceau executed. (*And often misspelt.*)
And now we return to our scheduled programming . . .

XENON FEATURES IN PRESTON LABOUR EXCHANGE
(*EXPRESS* 86)

A clever headline which masked the fact that Debra Preston waited until she had made the high score on *Xenon II* before going off to have her baby daughter. Tara was born in Trent City General Hospital only hours after mum had scored some amazingly huge figure on her Atari 520 STFM.

GIVE A MONKEY AN APPLE MAC AND SHE WILL READ HER BOOKS
(*EXPRESS* 88)



The story of the ape taught to use a Mac for 'reading' picture books - a dreadful headline that eventually led to its writer being sacked.

AN ILL WIND
(*EXPRESS* 89)

The Frankie virus was discovered in the USA. Frankie went out in search of STs which were running pirated versions of the *Aladin* Macintosh emulator. Once it found the copied software running it dropped small bomb icons, put up the message "Frankie says No More Piracy!" and proceeded to trash any application files.

BIG BLUE SEES RED, AT WHITES ONLY
(*EXPRESS* 91)

IBM decided to pull its TV advertising during the US PGA Championship because the Shoal Creek club had a whites only policy. Despite this laudable action, when contacted for a comment IBM remained as silent as ever.

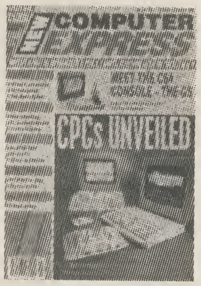
OH WHAT A GIVEAWAY!
(*EXPRESS* 92)

One man + one Toyota MR2 + one talking computer + too many drinks = serious trouble. 18 year old Micheal Leone careered into a police car so hard "that it

A timely break from all this history with Tim Smith's 1990 in five easy chunks:
1) Playing chess in a revolving hotel bar 72 floors up in Atlanta while a helicopter flew below.(*whoopy doo!*)
2) Moving from a PCW to a Mac Plus.
3) Interviewing Ralph Steadman over the phone about his computer art..
4) Nearly seeing the psychic PCW's prediction for an England World Cup final victory.
5) Not catching a virus on any of my computers.
And now we return to our scheduled programming . . .

took the officer 134 feet to bring the cars to a halt". Leone remained unhurt but one-over-the-eight in his car. What gave the Miami-based cop the clinching evidence to bust the deliquent was the fact that the MR2's onboard computer was cooing "Slow down, slow down."

SAUCY SILICON FOR SAFE SEX
(*EXPRESS* 93)



How do you fancy having your computer wired "directly to the pleasure centres of your brain"? Well that was the prediction from Mr Milton Rolf in the *Reno Gazette Journal*. Mr Rolf lectures in robotics and came up with the immortal quote "the only sex organ anybody has is in their brain." So that's why hackers are such cold fish.

BBC MAKES A COMFY MOUSE HOUSE
(*EXPRESS* 95)

In the considered opinion of the Centrefold crew what follows must be one of the most scintillating opening paragraphs of any news story this year:

"There's nothing especially fascinating about the computer mouse – unless it's alive, goes squeak and is petrified of cats. That's the type of rodent inhabiting Pippa Giles' trusty old Beeb."

Yes that's it, a mouse in the machine. However, once it was discovered, the little begggar did a runner - maybe looking for an upgrade.

ALL CHANGE
(*EXPRESS* 96)

No story here but a reminder that this was the last ever issue with the old format: (Slips into BBC history documentary voice) By the following week *Shopping Express* had changed radically, *Express Mail* had moved from the back of the mag to the front. And yes, this collectors copy was the last to have PCW, MSX, QL, BBC, and SAM Coupé specific columns. The letters were soon to hit the *Express* office and continue flooding in for, oooh, days about these changes.

WHAT'S NEW?
(*EXPRESS* 97)

COMPUTER EXPRESS
SECRET AMIGA UNVEILED!

Here it was, the new-look *Express*. For the first time, Colin Campbell's Frontend was there to greet readers, six colour pages to begin your read. Also into the mag came a new look Shopping Express with Console Zone, Express On-line, Circuit City, Mark Higham's Games Week, a zappier PD Column and of course The Centrefold. Welcomed to the staff were Haydn Fitz-Williams of crisp fiver fame, and Richard Frederick.

FIRST WITH THE NEWS!
(*EXPRESS* 97)

Yes *Express* managed to slip a picture of future prime minister John Major into a story about the PCW being five years old. We don't know if anyone was astute enough to notice but this was our hidden tip for the Conservative party leadership AND IT WAS A MONTH AHEAD OF ANYONE ELSE! (*calm down now – sub*).

LONDON OVERRUN BY MONSTERS
(*EXPRESS* 98)

Yes it was the CES show guide in full. Written on the spot by news editor C Campbell. The guide gave the highlights of the Earl's Court Computer Entertainment Show. All the highlights save for a number of journalists getting stuck in a lift at 2.00am. More dangerous than you think when one of them was Keith Pomfret!

SIR CLIVE'S DRIVE
(*EXPRESS* 98)

Sir Clive Sinclair finally came through with a new C5 (see *Express* 65). His brand new four seater could do a respectable 70mph and it was greeted with far less derision than the previous in-car-nation. The reason, as Sir Clive was quick to point out: "It's to do with global warming and pollution."

Express says "Jolly well done sir! Here's to you!"

• In the best Centrefold tradition, Domark win this year's silly software house award. Zounds!

POP SLIPS QUIETLY AWAY
(*EXPRESS* 99)

So it was goodbye, *Popular Computing Weekly*. Lots of people used to read you, including Keith. But now they don't.

THE SPECTRUM PLUS 3 DIED THIS WEEK – WHY?
(*EXPRESS* 99)

So it was goodbye, Spectrum Plus 3. A few people used to buy you. Including Dave Golder. But now they don't.

GRUESOME EXPLODING HEADS
(*EXPRESS* 100)

Not only did we move into treble figures we also managed to get this classic headline concerning *Horror Zombies*, a new game from Millenium into the issue.

FLIGHT SIM IN COURT OVER AIR CATASTROPHE
(*EXPRESS* 101)

Only in America, part 1,100,230,221. North West Airlines was sueing the makers of a pilot training simulator after one of their planes crashed. The buck, as they would say if there wasn't a danger of litigation, starts here.

INTRODUCING ROBOPANDA
(*EXPRESS* 102)

"Speaking at a recent Police Constables' conference, top cop Charles Kelly predicted that law enforcement vehicles of the future would be fitted with computers, electronic notebooks and sophisticated communications equipment..." The panda car goes cyber. You have 15 seconds to remove your head from the railings.

BARK TO THE FUTURE
(*EXPRESS* 103)

The European Parliament proposed a system of computerised electronic dog registration. Every mutt in the EC would have to be registered. This was estimated at 36 million dogs.

WHAT A WASTE
(*EXPRESS* 104)

£3 million worth of computer which was bought 18 months before for the NHS was still in its packaging. The IBM 3090 mainframe had to be sold for £1 million.

FUN WITH TELLY-TOTS
(*EXPRESS* 105)

A classic caption here. Beneath a picture of a puppet post-person were the immortal lines: "Postman Pat: he delivers letters". Who says we don't inform? The story concerned a new series of games marketed by Friendly Learning. These included characters such as the mysterious Huxley Pig and *Express* faves Thomas the Tank Engine, and Sooty'n'Sweep.

Another interuption. This time it's deputy editor Stuart Anderton's year in bits:
1) Hilda the Hag got her come-uppance
2) My rates bill increased elevenfold
3) The colour NeXT was gobsmacking
4) *XPress 3* made work fun for a week
5) I got married – egocentric me! (*and he didn't tell anyone!*)

TROOPS ON-LINE
(*EXPRESS* 106)

The GIs out in the Gulf could not hope to escape from cute schoolkids, mad grannies, or weirdoes because of the new 'Letters from Home' service. This enabled anyone who wanted to, to send Email messages.

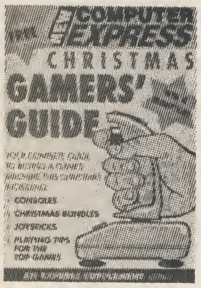
NO ONE NOTICED AT ALL
(*EXPRESS* 107)

Not one letter came flooding in concerning the headline which read: "Double Dose of Gasgoigne". What happened to all our faithful pedants? (*Or didn't you know it's spelt with a 'c' either?*) By the way, the story concerned a soccer sim compilation called *Soccer Mania*.

DVI AS EASY AS ABC
(*EXPRESS* 108)

The Jackson family, a popular music combo from the 1970s, announced the launch of its Young Minds company. YM is to concern itself with projects involving interactive multimedia, Digital Video Integration and Llamas for the youth.

NORMA SERVICE IS RESUMED
(*EXPRESS* 109)



A picture of a kitten and one of the PM - that's John Major remember – lead into a story about Mrs Major presenting prizes for Acorn's National Pet Week Acorn Schools' Challenge.

GREAT SCOTT WATSON, WE'RE ON CD
(*EXPRESS* 110)

Watson and Holmes were joining thousands of other characters in the move from paper to CD-ROM. Software Toolworks had just released a new package for the PC.

THAT'S ALL FOLKS

And so we bid fare-thee-well to 1990. It was one of those years in which no one gave you a Mac to do with as you wished, you were not awarded any prizes .for inventing new programming languages... basically nothing really wonderful happened. Oh well, let's hope that 1991 works out a little more exciting for you. Personally, I'm off to the pub.

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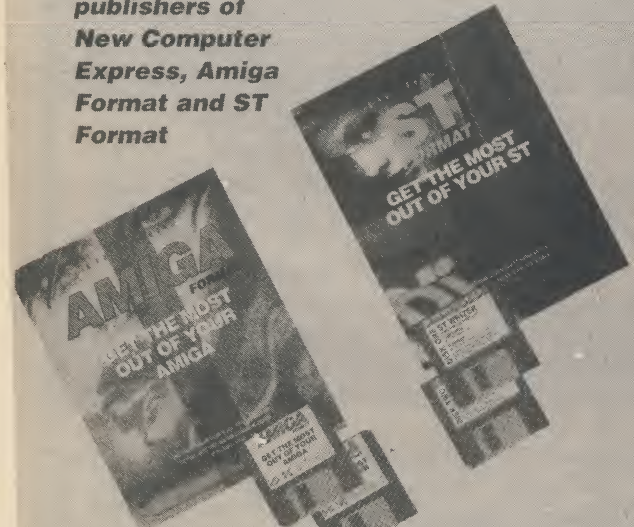

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COLECO ADAM - Keith Mamer, UKAS 33 Homer Road, Croydon CXR0 7SB

COMMODORE ALL MICROS - Jack Cohen, ICPUG 30 Brancaster Road, Newbury Park, Ilford IG2 7EP 081-346 0050 home: 081 579 1229 day

COMMODORE AMIGA - UK Amiga Users Group. Contact 144 Charles Street, Leicester LE2 0OD .0533 510066 voice; 0533 517615

CLARGY/MEDICAL EDUCATION – Mr T Jones, FREE-ED Shareware/PD 85 Stoke road, Taunton, Somerset TA1 3EL. 0823 321 481

COMMUNITY COMPUTING - Community Computing Network 2nd Floor, 35 Pink Lane, Newcastle, NE1 5DW 091-261 0317

COMPUCORP. Compucorp University users group c/o Compucorp, Cunningham House, Westfield Lan, Kenton, Middx

COMPUNET – write toIndependent Compunet Club, 148 Furzehill road, Boreham Wood Herts. WD6 2DX

CONFERENCING - Compulink, suite 2, The Scantuary, 23 Oakhill Grove, Surbiton, Surrey KT6 6DU Voice 081-390 8446 CIX BBS 081-399 5252

CPM & MSDOS USERS GROUP – 42 Birkbeck Road, Wimbeldon, London SW19 9NZ. 081-543 0824

CRYPTOGRAPHY & CODES - Mike Barlow, American Cryptogram Association 5052 Chestnut Avenue Pierrefonds, Quebec HBZ 2A8 Canada

DATA PD LIBRARY for Amstrad CPC users. Send SAE, tape/disk and 50p to Kingsmill 202 Park Street Lane, Park Street, St Albans, Herts AL2 2AQ

DISABLED - Jeff Hughes, Special Needs User Gp, 39 Eccleston Gardens, St Helens WA10 3BJ 0744 24608

DRAGON - Paul Grade, National Dragon Users Group, 6 Navarino Road, Worthing, Sussex or telephone 0903 207585

ECONET – write to Michael Ryan, Econet User Group, Balkeerie Cottage, Eassie by Forfar, Angus DD8 1SR

EDUCATION - Charles Shannon, TECUG, 35 Wellington St, Gravesend, Kent DA12 1JG. 0474 567 931

EIGHT BIT BACK-UP 8-bit user group for all. 25p plus sae. to: 8-bit back-up, 1 Northolme Close, Grays, Essex.

EINSTEIN - Graham Bettany, UKEUG 80 Dales Road, Ipswich IP1 4JR

EINSTEIN PD USER GROUP – Help and advice for all Einstein users. Over 100 disks of PD software. Send SAE to SW Knowles, 23 Howldsworth Rise, Arnold, Nottingham, NG5 8HZ

ELMSOFT PUBLIC DOMAIN SERVICE for the ST any weekend at Camden canal market, Haven Street, London

Emulate. For Amiga, Amex. With monthly newsletter. Write to Pat 12b Northbrooks, Halrow, N Essex

ENTERPRISE – William Creaser, 6 Provident Street, Shaw, Oldham, DL2 8AQ. Independent Enterprise User group. Tel 0706 881382 7-9pm weekdays.

ENTERPRISE - Tim Box, Independent Enterprise User Group, 50 Holdenhurst Avenue, Finchley, London N12 0HX. 081-346 8032

FLIGHT SIMULATOR (MSDOS) - Alan Hawkins, SIMFLY Club 2 Henley Manor Raincliffe Ave, Scarborough YO12 5BU

FORTH Language - Douglas Neale, FIG (Forth Interest Group) UK, 58 Woodland Way, Morden, Surrey SM4 4DS

FRACTALS/CHAOS THEORY - Andy Lunness, 69 Bronte Avenue, Bury, Lancs BL9 9RN. Telephone 061-764 6469

GENEALOGISTS - Computer Group, Society of Genealogists, 14 Charterhouse Buildings, London EC1M 7BA. 071-251 8799

GENERAL HOME MICROS - Steve Winter, Chic Computer Club, PO BOX 121, Gerrards Cross, Bucks SL9 9JP 0753 884473

GUNNING PD ST PD – 47 Auchingane, The Tryst, Edinburgh, EH10 7HX

GUAGE - Martin Houston CUG (UK) Houston Technology Ltd, 14 Arden Oak Rd, Sheldon Birmingham BS26 3LX 021-722 3168

HITACHI MBE 16002 PC - Bruce Ainge HICUPS 16 Nine Acres Road, Cuxton, Kent ME2 1EL. 0634 715759

HOUSING ASSOCIATIONS - Caroline Maries, Micro Users Ltd, Beaver Housing society, 23 Lewisham High Street, London SE13 5AF. Telephone 081-318 1126

HEALTH WORKERS - Sue Mckendrick, Healthlink, 164 Windsor Rd, Ashton-in-Makerfield, Wigan WN4 9ES. Voice: 0942 712 385

IBM PC - The IBM PC User Group PO BOX 360 Harrow HA1 4LQ.081-863 1191 BBS 081-863 6646

JUPITER ACE – John Charter, Jupiter Ace Forth User Group, 17 Spring Wood Close, Dunston, Chesterfield S41 8BS. Tel 0246 237555

FIND YOUR LOCAL CLUB - John Dale, Banc y rhosyn, 14 Bron Y Glyn, Bronwydd Arms, Carmarthen SA33 6JB. 0267 230 771

LOCAL AUTHORITIES - Local Authority Micro User Group, John New, Borough Engineer's Dept, Municipal Offices, North Quay, Weymouth, Dorset DT4 8TA. 0305 785101 ext 272

LOTUS PRODUCTS - Lotus User Group, 79-80 Peascod St, Windsor, Berks SL4 1DH. Telephone 0753 841686

LYNX - R B Jones, Lynx User Group, 39 Ashton Close, Needingworth, St Ives, Cambs

LYNX DISK USER GROUP. J Koushappas. 172 Pasteur Gdns, London N18. Tel: 081 807 3859

MEGADRIVE CONSOLE CLUB – Megadrive games new, old, bought, sold. Also exchange games. Andrew Stanford (0789) 764039

MEMOTECH FILE – 93b StJohns Road, Biddulph, Staffs ST8 6LL

MEMOTECH - Phil Eyres - Memotech Owners Club, 23 Denmead Road, Harefield, Southampton SO2 5GS. Tel 0703 585106

MICROSOFT WORD - Lesley Port, Microsoft Word User Group, Folly House, Madeira Walk, Bachelors Acre, Windsor, Berks SL4 1EU. 0753 831001

MID CORNWALL COMPUTER CO-OP. Atari ST. 8 Victoria road, Roche, St Austel, Cornwall PL 26 8JF. 0726 890473

MIDI/MUSIC – Spectrum music machine/MIDI user group. Magazine on tape, plus programs and lots more. For more details contact Sean Sanderson on 05242 62258

MOTOROLA 68xxx MICROS – write to Rick Applegate, 68 Microgroup, 8 Great Cob, Springfield, Chelmsford, Essex. BBS 081-316 7402

MSX SYSTEMS – write to Keith Neal, MSX Link, Austerby House, 80 Austerby, Bourne, Lincs PE10 9JL

NASCOM/80-BUS/CPM - Scorpio Systems, PO BOX 286, Aylesbury, Bucks HP22 6PU. 0296 624868

NEWBRAIN - Ron Bury, NewBrain Support Grp, 70 Cranberry Lane, Darwen, Lancs BB3 2HL 0254 771891

NIMBUG – write to 13 Belle Vue Ave, Gosforth, Newcastle-upon-Tyne NE3 1AH. Telephone 091-285 7806

NW ARCHIMEDES USER GROUP – Meets every Friday at Citizens Advice Bureau, next to Spectrum arena in Birchwood, Warrington. Ring Paul on 051-426 3915 after 6pm

OS/2 - Karen Burns, OS/2 User Group,Cecily Hill Castle, Cirencester, Glos LG7 2EF Telephone 0285 655888

OSBORNE/CPM/MSDOS – write to Jeremy Browne BOOG, 102a Aldershot Road, Fleet, Hants GU13 9NY. 0252 621745 voice or 626233 BBS

PC/PD CLUB – write to 48 King William Drive, Cheltenham, Glos, GL53 7RP

PC SOFTWARE – PC Serve, 1147 Greenford Rd, Greenford, Middx UB6 0DP 081-864 2611, BBS 081-864 2633

PHILOSOPHY APPLE - G Haines, Chinese Room Club, 43 Cornwallis Gdns, Hastings, East Sussex TN34 1LX. 0424 714 102

PICK OPERATING SYSTEM - Hugh Kellt, UK Pick Users Assocn, PO BOX 907, London N10 2SB. 081-462 4666

PRESTEL - Andy Leeder, ClubSpot 810, Church Farm, Stratton St Michael, Norwich, Norfolk, NRQ15 2QB

PSION ORGANISER - Mike O'Regan, IPSO, 130 Stapleford Ln, Beeston, Nottingham NG9 6GB. 0602 735482

PUBLIC DOMAIN – Amiga disk fanzine specialising in public domain.Write, with SAE, to Chris Jackman, 3 Albion Terrace, Lexham Road, Litcham, Kings Lynn, Norfolk, PE32 2QQ

RESEARCH MACHINES - Steve Rochford RM National User Group, George Stephenson High School, Southgate, Killingworth, Newcastle NE12 0SA. 091-268 2002

REVELATION (PICK) – write to Malcolm Frame, UK Revelation User Group, 136 Saint Albans Road, Watford WD2 4AE or Telephone 0923 35515

R:BASE – write to Mrs Tansy Beal, R:Base User Group c/o Room A2044 BBC Woodlands, 80 Woods Lane, London W12 0TT. Telephone 081-576 7187

S&T PD for the ST.large selection of PD from £1. Send £1 or a disk and 50p for a list. All prices include postage and packaging. Send cheque or PO to Simon Eve, S&T PD, 6 Crediton Road, London, NW10 3DU

SA40 User group – wriote to Roy Williams, 17 Grove Road, Acton, London W5 6AW.

SANYO MBC-550 - M H Syed, Wistaria, 53 Acacia Grove, New Malden, Surrey KT3 3BP. 081-942 9009

SCHNEIDER EURO PC - Alex Kefford, SEPUG, 11 Crabbet Road, Three Bridges, Crawley, West Susex RH10 1NF

SCIENTIFIC PC USERS – write to Tim Bunning, SPCUG PO BOX 17, Retford, Notts DN22 6BQ Telephone 0777 709009

SEGA SWAP CLUB Exchange your old megadrive/master system carts –10 Sandwith Road, Todwick, Sheffield, S31 0JP

SERVICES USERS - Squadron Leader G Howson, Services Personal Computer Association, Stlk Eng 15a HQSTC RAF High Wycombe, Bucks

SHARP USERS CLUB Andrew Ferguson, 11 Harcourt Close, Henley-on-Thames, Oxon RG9 1UZ. Telephone: 0491 574850 evenings only
SIRIUS - Simon Sheppard, ISSUE PO BOX 222, Brighton BN1 3BR

SOFTWARE EXCHANGE – SAE for info 13 Bourneville Lane, Birmingham, B30 2JY or call 0860 444594 12-10pm

SOLITUDE MOUNTAIN – Friendly new Amiga user group. Send blank disk or 50p to 565 Heathway, Dagenham, Essex

SORD M-23 B Nicholson, Schlumberger Norge A/S Bjergstedveien, 4007 Stavanger, Norway. 474 657002

SMART SYSTEMS USERS – write to Francis Barton, Basement Holy Rosary church, Louis Street, Chapeltown, Leeds LS7 4BP. 0532 629202

SOUTHERN AND DISTRICT. PC and ST user group.Tony Lowes 61A Broadway West, Leigh on Sea, Essex S59 2BX

SPECTRUM PLUS 3 USER GROUP – monthly magazine. 57 Lovers Walk, Dunstable, Bedfordshire, LU5 4BG

SPECTRUM DISCOVERY CLUB – magazine on disk for the Opus Discovery Disk Drive and the Sam Coupe. BD Mumford, 57 St Saviours Road, West Croydon, Surrey, CR0 2XE

STOS magazine, out every month.Send an SAE for full details to 11 Shore Crescent, Bishops, Waltham, Hants SO3 1DZ

SUPERPROJECT - Geoff Groom, 3 Sunnymeade Ave, Carshalton Beeches, Surrey, SM5 4JA. 081-643 3336

SYNCROSOFT. Exclusive 64 computer information. Hardfacts, trouble shoots, pocket book. £2.95 to join, including p&p. Make cheques to Syncrosoft and send them to 9-10 Morland Gdns, Southall, Middx UB1 3DY

TAS (DATABASE) - Neil Hegarty, TASUG C/O Solutions for You, 1st Floor, 2 Lytton Rd, New Barnet, Hertsm EN5 5BY. 081-441 1133, BBS 081-449 4171

TANDY/MS-DOS - Roger Storrs, NATGUG Oakfield Ldge, Ram Hill, Coalpit Heath, Bristol BS12 2TY. 0454 772 920

TEXAS T199/4a - Peter Walker, T199/4a Usr Gp UK, 24 Bacons Drive, Cuffley, Potters Bar, Herts EN6 4DU. 0707 873778

TEXAS T199/4a - Peter Brooks, International TI User Group 96 Banbury road, Oxford OX2 6JT. 0865 510822

THUNDERNEWS. CBM 64 user magazine on disk/tape. Send sae for details and competition to Thunderscrews, 159 Hough Road, Wallsall, West Midlands WS2 9BG

TIUGUK. TI99/4A user group UK for S/W on disk, tape and module. Offers magazine and help. Write with SAE for more details to Peter Walker, 24 Bacons Drive, Cuffley, Potters Bar, Herts EN6

TRANSPUTER - Howard Oakley, Transputer User Group, Brooklands Lodge, Park View Close, Wroxall, Ventnor, Isle of Wight

UNIX USERS - UKUUG Secretariat Owles Hall, Buntingford, Herts, SG9 9PL. 0763 73039 /73255 (fax)

VENTURA PUBLISHING - VPU (Ventura Publisher User grp) Linda Liddell VPU c/o LLA Lound House, Forncett St Mary, Norfolk, NR16 1JP. 0508 41580

WORDPERFECT – Michael Norman, Wordperfect User Group (UK) Dove Barn, Manor Farm, Wootton Woodstock, Oxon, OX7 1DX Telephone 0993 812 670

WORDPERFECT – Dr Ian Barton, A Perfect World, High Rigg, Alma Rd, Tideswell, Derbys SK17 8LS Telephone 0298 871 925

• BBS

WEST NORFOLK BBS – call 0553 761290 at 1200/2400 baud. On-line 10pm to 8am. Specialist Railway area and newsletter. Good for just testing the comms water. Net mail (2:254/73). Some echoes.

BEXHILL COMPUTER CENTRE – telephone 0424 224417. Speeds V21, V22, V22bis and V23. Open outside 9am-5pm hours, and all day Sundays.

ALMAC PC BOARD – ILink and Fido mail sections, mainly for PC PD software, but some Amiga and Atari. 0324 665371 – 300 – 2400 MNP5. Other modes are 0324 665460 – HST dual standard and 0324 665449 Hayes V Series 9600.

EDINBURGH CASTLE BBS – 031 334 7043 – HST dual standard.

INFOCOMM UK – 0895 72021 local call London V21, V22 V22 BIS. 9am to 9pm seven days a week. Ideal for newcomers and oldtimers in the comms world

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Dcs	081-879 7578	V21/22/22b
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Falcon Bbs	081-527 4165	V21/22/22b/23
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Liverpool Ros	051-931 4271	V21/22/23
Loch lomond	0389 55762	V22/v22bis
Loft	0442 230461	V21/22/22b/23
Logical BBS	0772 623167	300-2400
Log On In Tynedale	0434 606639	V21/22/22b/23
London Bb	081-455 6607	V21/22/22b/23
London City Mag	081-468 7648	V21/23/23v
London Connexion	081-667 1313	V21/22/22b/23
London Embassy	081-366 1778	Hst
London Guest Hse	081-748 0974	Hst/v32
London Mail Centre	081-534 1200	V21/22/22b/23
London Metropolis	081-519 1055	V21/22/22b/23
Loony Bin	0703 787489	V21/23
Mabbs	021-444 8972	V21/22/22b/23
Mach II Bbs	0242 260 685	V21/22/22bis
Mactel Hq (grn Box)	0602 455444	V21/22/22b/23
Mactel Metro	081-543 8017	V21/22/22b/23
Mactel Phoenix	0473 610139	V21/22/22b/23
Madness Bbs	0603 300947	V21/22/22b/23
Magic Castle Bbs	021-430 3761	V21/22/22b/23
Magic Mushroom	0361 83641	V21/22/22b
Magnum	0274 547006	V21/22/22b/23
Magrathea	0376 24402	V23v
Manor	0980 863031	V21/22/22b/23
Marctel	081-346 7150	V21/23/23v
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Midnight Caller	0633 279243	V21/22/22b/23
Mind Boggles	0362 762868	V21/22/22b/23
Mininet 3	0642 672813	V21/22/22b/23
Miracom Support	0473 232540	Hst
Mirage	061-652 1242	V21/22/22b/23
Mirror Ii	0628 810889	V21/22/22b/23
Mirrorworld/quest 1	0883 844044	V23
Mission Impossible	0602 654329	Hst
Mk Board	0908 311005	V21/22/22b/23
Mkbbs	0908 504556	V22/22b
Monkey Tree	0952 677002	V21/22/23
Monusci	0293 545665	V21/22/22b/23
Motor Exchange	0484 435314	V21/22/22b
Multi-bbs	041-649 9043	V21/22/22b/23
Murdoch'S Hangout	021-711 2620	V22/22b
Murky Caverns	081-426 9386	Hst
Mwcfe	0926 421844	V22bis
My Little Phoney	0865 773277	V32/HST
Nicc Mid-west	0341 250377	V21/22/23
Nite Life	071-976 6807	V21/22/22b
No Escort Required	081-200 3817	Hst
No.1 Bbs	081-958 1689	V21/22/22b
Norpac	0434 608324	V21/22/22b
North Wales Bb	0978 88372	V21/22/22b
North Yorks Qbbs	0423 868065	V22/22b?
Northern Lights	0768 773685	V22/22b
Norwich Onion Bbs	0603 423305	V21/22/22b/23
Nova	0455 553371	V21/22/22b
Nova-net	0274 370760	V22
Odd-ball	081-679 2583	V21/22/22b/23
Open Access	081-427 3974	
Optix	0482 872294	V21/22/22b/23
Organic Garden	081-464 3305	V21/22/22b/23
Out Of The Blue	081-668 7667	V21/22/23
Owl Service	0532 605876	V21/23
P'S & Q'S Tel	051-236 3105	V21/22/22b/23
Pacific Lightning	0732 845338	V22/22b
Packet Bbs	081-547 1479	V21/22/2
Packet Place	0484 435620	V21/22/22b
Palm Beach	0303 265979	V21/22/22b/23
Pazaz Viewdata	0383 620259	V23v
PC Access	071-608 0081	V21/22/22b/23
PC Forum	0322 335348	V21/22/22b/23
PC Serve Shop	081-864 2633	V21/22/22b/23
PC Serve Softnet	0895 420164	V21/22/22b/23
PC Serve Storehouse		
	0494 728094	V21/22/22b/23
Pc-vax Opus	081-800-3549	V21/22/22b/23
Pcamiga Bbs	0602 735119	V22/22b
Peacenet West	0895 448998	V23v
Pecan Software BBS		
	0272 248076	V21/22/22b
Penguin	0943 830820	V21/22/22b/23
Phantom	0226 340425	V21v/22v/23
Phoenix	0249 817704	Hst
Piston Popper	0424 853361	
Plug-ole	021-472 0256	V21/22/22b/23
Plus And Minus	0559 322766	V21/22/22b/23
Poacher	0476 62450	V21/22/22b/23
Polynet Bb	071-580 1690	V21/22/22b/23
Port Of Call	081-391 5779	V21/22/22b/23
Power Play Qbbs	0698 423669	V21/22/22b/23
Power Tower	0533 880114	V21/22/22b/23
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Project Bbs	0384 401770	V21/22/22b/23
Prometheus	081-300 7177	V23v
Proximity	0793 480028	V21/22/22b/23
Publishing Shop	091-261 5228	V21/22/22b/23
Purely Pc	0232 645942	V21/22/22b
Pyramid	071-239 0871	V21/22/22b
Pyroto Mountain	0895 59071	V21/22/22b
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Sector	0772 454328	V23v
Semaj Qbbs	0303 862415	V22/22b
Sentinel Bb	0628 781429	V21/22/22b/23
Shades	0342 810905	V23
Shadowfax	0252 528146	V21/22/23
Shadowland	081-897 0488	V21/23
Shareware Library	0424 83654	V22/22b
Shasby'S Lair	0772 561066	Hst
Sherwood Forest	0602 397113	V21/22/22b/23
Short Circuit	0273 462967	Hst
Sid (acorn Service)	0223 243642	V23v
Signal Box	081-337 6583	V21/22/22b/23
Sin Bin	0532 661536	V23
Sirius	081-542 3772	V21/22/22b/23
Sirius Ii	0494 778425	V21/22/22b
Skull's Tower	081-943 1194	V21/22/22b/23
Sky-line	0603 742273	V21/23/23v
Skyline 1	0234 741691	Hst
Softmatic Bbs	0733 322540	V21/22/22
Software Source	0892 661149	V22/22b
Sounds Of Mercia	0203 682896	V21/22/22b
South Lincs BBS	0780 63954	
Sparx	0793 480287	V21/22/22b/23
Split Infinity	0342 712248	V23v
Pook Bbs	0268 767365	V21/22/22b/23
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Tequila Sunset	0703 867786	V23v
Terminal Net 5	0402 456135	V21/22/22b/23
Terminal-net	081-423 5262	V21/22/22b/23
Tharr Bbs	0234 261804	V22/22b
Third Wave	071-585 3163	V21/23
Three Kings	0354 56267	V21/22/22b
Track 83	0953 851351	V21/22/22b/23
Transylvania	0274 621668	
Tranz-com Bbs	081-952 6273	V21/23
Trinity I	0392 410210	V21/22/22b/23
Trinity Ii	0367 22764	V21/22/22b/23
Tug Ii	0905 775191	V21/22/22b/23
Twilight Zone	081-788 0884	V21/22/22b/23
Twilight Zone Ii	071-608 1485	Hst
Uk Healthlink	0942 722984	V21/22/22b/23
Unisys Etoi Bbs	081-453 5739	V21/22/22b/23
Unit One	0285 713688	V21/22/22b
V.i.t.a.s.	021-749 5860	V21/23
Valente'S Bbs	071-978 2078	Hst
Vector System	0329 45824	Hst
Viking East Anglia BBS		
	0255 503048 Rb	V23v
Village	081-464 2516	V21/22/22b/23
Village Fayre	081-841 5971 Rb	V23
Voyager Bbs	061-725 9583	V21/22/22b/23
White Lightning	0635 37259	V22/22b
Whitehall Pent	071-930 3903	V21/22/22b/23
Wild Imaginings	091-263 4303	V21/22/22b/23
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Wolverhampton Ros	0902 745337	V21/22/22b/23
Womble Base	081-979 9606 Rb	V23
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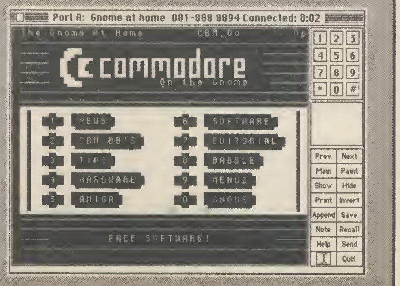
V23, viewdata



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TECH TIPS

Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Keith Pomfret's Tech Tips and we'll soon see you right. Send your sorry stories to Tech Tips, Beauford Place, 30 Monmouth Street, Bath BA1 2BW.

■ TIP! Sam Pulls

I would first like to congratulate you on an excellent magazine. (*Thanks ... Ed*)

I have a little tip for Amiga owners who have either a shortage of sound samples or a shortage of cash to pay for a sampler.

First, you need some sampler software with cut and paste features (I use the Datel sampler, very underrated I think). There are many sample editors available throughout the public domain (17 Bit, etc. plug ends!).

Then all you have to do is switch the file mode to RAW (if switching is required), then load any Soundtracker, MED or SoundFX tune (uncrunched) and you will have the header for the tune, which contains all the samples, which you can now snip up and save as individual samples. Voila.

May I take this opportunity to ask any Jean-Michel Jarre fans to write to me ?

Duncan Richardson, Stoke-on-Trent, Staffs.

I'm afraid your address got lost under the table so you'll have to be satisfied with seeing your name in print. By the way, did you know that MIDI man David Hickford of DHCP worked on the software for JMJ's laser harp at the Docklands extravaganza? No? Nor did I until he told me.

■ HELP! Offered

Just a short note to let you know that we are a Commodore Service Centre and will gladly help any readers who have problems in Ireland regarding computers or amateur radio equipment. Great mag, keep up the good work.

Hamsoft Communications, Santa Lucia, Ballykeelaun,Parteen, Co Clare, Ireland.

What a sneaky way of putting an ad in *Express*. I've passed on your details to our Ad people and they'll be contacting you about some proper promotional stuff.

■ HELP! Choices

Having just sold my Spectrum Plus 2, I wish to upgrade to the next level of computer, my choice (mainly due to cost) would be the Atari STFM.

The main use would be for games and educational software for an eight-year-old. My main concern is that the STFM is, as computers go, rather old. I do not want to pay out for this model and then find next year, or in the near future, that production ceases in favour of the STE, followed by the gradual drying up of software.

I was caught out buying the Dragon 32, and waited (luckily) to see how the SAM went. As you see I am looking to the future as well as now.

In terms of long term use would I be better off sacrificing my bank account and going for the Amiga 500?

P Blannin, Cirencester.

If I knew what Atari, Commodore, MGT or even IBM were going to do with their product lines in the next couple of years I would apply such prognosticatious abilities to the gee-gees and retire on the proceeds.

The STFM has a broad user base of software and even if they stopped making them now, there would be no shortage of available software. The Amiga is in the same position and the SAM is reincarnating itself back from an early demise. So any one of the three could fit the bill, depending on your bank balance.

In simple terms, look for a machine that does what you need and has the available software. That way if it does curl up its processor and die, you'll not be left with a machine and no programs.

■ TESTIMONIAL! Dixons

I read with interest your article on the type of advice and service offered by high street retailers. No doubt you will be inundated with sorry tales of poor service, so I thought I would put the other side.

I used Dixons on several occasions when I knew exactly what I wanted to buy. My first computer was a Spectrum Plus which was bought from Dixons in Nottingham. I used it for about six months with a black and white TV. When I got a colour TV I found that the computer still worked in black and white. I took it back to Dixons well outside the period when a shop would feel obligated to do more than send it back to the manufacturers. With very little persuasion they exchanged it for a brand new computer.

On another occasion I used Dixons in Derby to purchase a printer. After a couple of months it failed. I accepted that it would have to go back to the manufacturers for repair. A couple of weeks later, I contacted Dixons. The manufacturers had explained that the part was difficult to get hold of (it was an Amstrad!) and there would be a delay of up to eight weeks. Without any prompting, Dixons offered a replacement. In fact they did not have that model in stock and so gave me a new printer which was several models higher in the range!

I accept that a general electrical retailer is not qualified to give expert advice on computers, but as long as I know what I want – I will continue to shop where I get good support when things go wrong. I also got very good service from Digicom of Milton Keynes with an ST related problem.

Paul Bates, Derby.

We've been quick enough to pounce when someone's naughty, so we ought to redress the balance when the boot's on the other cliché. I suppose tales of woe are juicier but it's nice to hear the up side from time to time.

■ TIP! Upgrade

In Tech Tips, *Express* 106, you told Richard Bladely that it is not possible to upgrade an Amstrad PC2086 to an 80286 machine. There is a way of adding an 80286 processor, thought not by a motherboard swap. Lancastrian International (115/117 Eldon St, Preston, Lancs 0772 200044/200088) have a limited supply of DACEASY expansion cards at £99 which should slip into a spare slot. Their ads claim that these cards will turn your XT into a 12MHz AT. You even get a free disk cache.

I believe that Amstrad, in its wisdom, decided to run expansion slots at 4MHz, so I would imagine this would mean that an upgrade of this sort will not run as fast as an 80286 on a motherboard.

I have contacted Amstrad about the possibility of purchasing a PC2286 board to replace the board on my PC2086. Their answer wasn't very clear, so I am not sure whether they said "No" because it isn't feasible – or because they didn't want to see me one.

I haven't purchased one of the above cards because all three slots on my PC2086 are full (fax card, scanner card, 2Mb EMS, with a MIDI card and joystick card back in their boxes).

Is there any possibility that you might conjure up a Circuit City project to solve this problem for the thousands of people there must be who have used up all their expansion slots?

Frank Gilbert, Crawley, West Sussex.

On the odd occasion when we've looked at expansion card upgrades, the slow running problem with certain card slots (Amstrad isn't the only one) has cancelled out any gain from the use of a faster processor.

As well as the 2086, there are upgrades for the lesser Amstrad 1640 but until documentation on their running speed is available, we'll reserve judgement. After all, there would be no point in putting a 6.6 litre V8 engine in a car and then feeding it petrol with a teaspoon, would there?

If we can persuade one of the suppliers of these twidgets that it's a good idea to test them, we'll give it some space in a future issue.

■ HELP! Software

I have an Atari ST and wish to program it to receive RTTY. I have the rest of the equipment to do this. What I have not got, and so far have been unable to discover, is a software program.

I would be most grateful if you could help.

J R Lemon, Aintree, Merseyside.

0782 335650 is the magic number that will help you out of that quandary. Goodman PD is one of the better sources of ST public domain and shareware programs.

■ HELP! Starman

I wonder if you could help me with something that has been bothering me ever since I bought an LC24-10 printer for my Amiga. Could you tell me where I can get hold of the little ROM cards with extra fonts that slot into the front on the printer, and also an automatic sheet feeder (I believe such a device does exist for the 24-10). What reminded me of these was your recent, excellent, article on 24 pin Printers – because the LC24-10 pictured had a ROM card plugged into it! A lot of adverts feature the printer itself, and ribbons – but none mention any of the 'extras'.

Two other small points while I'm here. Why are you using more news-print pages these days, I would have expected LESS of them what with the recent cover price increase! And why don't you have a Compunet ID? If you can lower yourself to having a Prestel MBX surely you can get a Compunet one?!

Dave Spink, Arbroath, Angus.

Try Star on 0494 471111 (printer hotline). As for your other points ...

The amount of paper and its type varies from issue to issue and is dependant on the content of the mag.

The MBXs were inherited from other beings from the planet Tharg and are nothing to do with us, although I agree that admitting in public to having any affinity to Telecom is a bit off.

■ HELP! The price is wrong

Question: Where can I purchase (if possible) a sub £100 Sega GameGear, as I have heard (Console Zone, *Express* 104 and 105) that it only retails at 19,800 yen (£79) in Japan.

I would also appreciate it if you could please supply this information soon, as my birthday is coming up, and guess what I want for a pressie? Thanks

Jack Holborn, Northumberland.

If the beast sells at £79 in Japan, you can add another 15 per cent VAT to that and a further five percent of the resulting number as import tax. That comes to ... a tad over the hundred quid mark. Funny old world, innit?

■ HELP! Leads again

I am writing to you out of desperation to find an answer to my little problem.

I have an Atari ST and I have recently acquired an IBM Enhanced Colour Display monitor. I have tried to get the information I need to connect the two together from umpteen sources but to no avail. I assumed that all monitors have a standard pin configuration and all I needed to do was to get a lead made up and my problem would be solved but apparently not. Yes, a lead would work but nowhere I went to, knew IBM's pin configuration.

The plug on the monitor is a 9-pin type, the same as that used for the mouse and joystick on the ST. Can you help?

Mr A Short, Southampton, Hampshire.

The number that you require is 0992 584205. If there's anyway of doing the job with a simple piece of electric string, RSD Connections will know how. Alternatively, you could get the pin configurations from IBM and your Atari manual and either work it out for yourself or send it in and we'll do it for you.

■ HELP! Mad Macs

Following the AMAX 2 review in *Express* 104, it strikes me that lots of folk would appreciate a really informative review of the new AMAX II Mac emulator. Especially now that we have had a really interesting one. According to your review the Mac can 'handle' colour properly and offers 24-bit colour.

I've read other reviews which have praised this kit but which have also failed to fully explain what you really need before the thing works a) fast and in colour, b) with really good resolution and c) with a large monitor. Will it work with a TV modulator? If you have an AMAX 2 plugged in to an A500, what slots do you use up and what does this mean that you CAN'T have?

Other reviewers mention that the emulator only gives you a small image in the middle of a screen yet Express says it can, 'take advantage of big screen monitors'. Big? Black and white only? I am confused - especially by the picture. The Mac screens seem to have wavy fuzzy lines all around them. Lastly how does it compare to the Atari or Spectrum emulators?

These are the main questions I need answered, because I need to acquire a capable 'Mac' that will handle animation and multimedia. Obviously if I can save several thousand pundits from a watery grave then it has to be worth the candle. The real question is will I be lucky enough to have this printed/answered? I love your magazine but I could love it more.

Kate Harlowe, Cheshire.

The simple answer has to be, if you want to do all of those nice Mac things, buy a Mac. While AMAX and all the other emulators will allow you to run Mac software on an Amiga, if you need to use the Amiga as a productivity machine, use it as an Amiga. Anything else will be second best. Apple has cut great wodges of cash off the price of Macs recently and £575 will buy you an entry level machine, £1,500 will see a colour Mac on your desk and under £2,000 is enough to turn out a useful system.

■ HELP! Uni challenge

I require some help in buying a computer system to enable me to study with the Open University.

I know there are a variety of computers that fit the Open University specification, but which do I choose?. I enclose the spec for you and I can probably go up to £1,500 Could you please list a selection of 6-10 in order of value and provide any information on articles published recently regarding the advantages or disadvantages of any particular models.

Microcomputer Specifications:

640K RAM

EGA, VGA or Hercules graphics and appropriate monitor

Mono/colour monitor

Twin disk drives (3.5-inch)

Keyboard (84 key IBM PC/AT compatible or equivalent)

Serial port (parallel or serial)

Mouse (Microsoft compatible)

Printer (80 column, 100cps) with graphic screen dump capability

GEM (Graphics Environment Manager)

All machines must be able to run or use:

1) MS-DOS 2.1 or higher.

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3) The mouse and printer or modem and printer must work simultaneously. All systems must be able to run unmodified IBM/PC versions of the following software:

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UCSD Pascal (PECAN) Version 4 2.2

***Framework* 2 (Ashton Tate) Version 1.1**

Stephen Foster, Liverpool.

A quick call to the OU on 0908 653972 brought the Help Desk Co-ordinator rushing to your aid. It would seem that the vast wealth of experience in student requirements leaves the OU unable to recommend a specific machine (ethics and all that). However, they were able to tell us that the Olivetti PCS series, Amstrad 2000 series and the sensibly priced Elonex range are ideal for students. I am glad to endorse that and state that given the option my own choice would be the Elonex (based on the high quality of Elonex review machines we've seen. ■

■ HELP! Dying Amiga

Since buying my Amiga A500 in December '89 I have had a lot of trouble. As I don't have much confidence in the staff at my local computer shop I would appreciate your opinion on my problems

My original Amiga had to be returned to Commodore four times:

1) After about three months I began to get a lot of read/write errors and 1Mb programs wouldn't work properly. After it was repaired I had no further loading problems with this Amiga.

2)The keyboard began to lock up. This began to happen more and more often.

3) The day after receiving it back it stopped working altogether. All it would do was flash the power light on and off.

After the fourth time I decided I did not want the same computer back again and I have recently received a brand new Amiga. The first disk I put in (Workbench) gave a read/write error and I now have very similar problems to those experienced with my first one. In detail these are:

1) I often get read/write errors but only from disks that use a Workbench. All other disks work perfectly. My disks have been tested on another Amiga at the shop and there were no problems.

2) When another 1Mb expansion was tested in my Amiga it loaded some programs that would not load before – but some that did load before wouldn't. There are still problems when the expansion is removed.

3) I have noticed that sometimes a screen of black garbage flashes up before a Workbench screen appears. Does this mean anything?

My local computer shop doesn't seem to think there is anything wrong with my Amiga. They have given me various reasons why these things may be happening including:

1) The disks may have viruses on them?(I am very careful, and they worked perfectly on another Amiga.)

2) It may have the E.C.S. fitted and not all programs are compatible? (It hasn't)

3) It may have a slightly different version of Kickstart fitted?

4) I must have a bad electricity supply at my home, (I don't see how this can be the reason because I use a surge protector – and the computer didn't work properly in the shop).

When I returned my Amiga to the shop they changed the expansion and because there seemed to be an improvement they thought they had mended it.

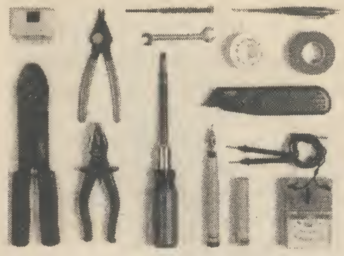
I still think the computer must be faulty and I would appreciate your opinion on whether you think this is so, if there could be another reason, and most importantly, what I should do about the situation?

Paul Austin, Adlington Park.

Take the computer to your dealers and tell them that under the 'Sale of Goods Act' the article you bought from them isn't fit for the purpose for which it was intended.

The problems you have experienced are over and above what you should expect from any piece of kit and they should replace your machine without delay. Should they choose not to honour their obligations, drag them screaming into court to make an example of them, lest other scurrilous vermin think they can treat *Express* readers with disdain. Or ask for your money back and shop elsewhere.

CIRCUIT CITY



If you want to build your own electronic projects you first need to know what all the components do. Keith Pomfret looks at a simple kit that offers 130 solderless projects to the hobbyist beginner.

The thought of hot solder and miniature components has put many people off the idea of electronic do-it-yourself but there's a way to learn about basic electronics without soldering – or the worry that the project may not work and will be a waste money.

The £29.95, '130-in-one Electronic Project Lab' from Tandy, is a board with unconnected electronic components built into it. Spring-loaded coil connectors allow any of the components to be joined to any other by simply putting a wire in the connector at each end.

The board is split into sections with a different kind of component in each: diodes, switches, capacitors, resistors, integrated circuits, transistors, controllers, a digital display and photo-electric cell can all be combined to make a variety of working models. There are even transformers, terminals and radio circuits – and a morse key, logic circuits and speakers complete the set.

Power is provided by six batteries producing nine volts, so it's safe to use. A 160-page book gives a good comprehensive guide to the Project Lab and its potential, and the simple instructions guide everyone from an absolute beginner to the seasoned electronic hobbyist through a series of interesting and informative projects.

When a project has served its purpose it can be disassembled without any damage to the components. One of the most useful purposes that I put the kit to was to build a simple circuit using the instructions. When I was sure that it worked, I duplicated it on a circuit board using new components and a soldering iron. Thus I was able to test an idea before it was constructed and if it didn't work, I had no laborious soldering to undo.

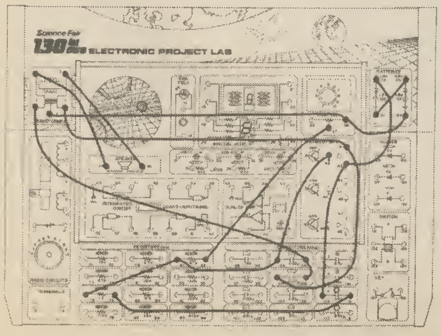
OUT OF THE BOX

With the Project Lab out of the box and sitting on the bench, the manual takes you gently through the procedures of installing batteries and the best way to attach wires to the coil terminals. There are some trouble-shooting hints and a simple section on baring the ends of wires by stripping away the insulation.

Each component is described and its function explained. Some of the more complicated components and circuits have a schematic plan of what's inside them as well as a description of what they do.

The manual then tackles the task of building a first project. The projects covered in the book each have a simple wiring sequence. As each coil connection on the board has a number, it's a simple matter of following a series of numbers to connect the components together in the prescribed way.

This is a simple, foolproof method which ensures the project is completed quickly and accurately, but this doesn't always offer the best route to comprehension.



• *First project: knocking together an 'Electronic Woodpecker'*

It's a good idea when you're following the number sequence to look at what you are connecting to what. Try to understand why things are connected to each other. If you can grasp the rudiments of circuit design in this way, it will stand you in good stead for more complicated projects in the future.

The wiring sequence listing for the first project looks like this:

1-29, 2-30, 3-104-106, 4-28-124, 5-41-105, 27-88,
75-87-103-40, 115-42-119, 76-116, 121-122

In other words you connect a wire between terminal coils 1 and 26, 2 and 30, 3 and 104 and 106, and so on until you get to the end of the list.

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The sequences are designed so that connections which could cause damage to the components are not made until the end. This is also a good rule when working on advanced jobs with solder. A further section on diagnostic instruments and good project practice precedes the first section of simple entertainment projects. These have little practical use but are a simple toe-dipping exercise for the beginner.

The electronic woodpecker, chirping bird, electronic cat and sonic fish-caller caused my popularity to wane around the office. The first few projects in the book are illustrated with a circuit diagram, sequential connection plan and a plan view of the board showing the physical connections that need to be made. There is also a blank space for making notes for future reference.

Practice over, it was on to the more serious stuff. As the book progresses, the schematic is dropped and you have to manage with the sequence and a circuit diagram. At this stage, you should be ready to try to make some of the projects on a circuit board as well. All of the components on the board are readily available from suppliers such as Tandy and Maplin.

Some of the more serious circuits demonstrate the way logic and components go together, but whatever circuit is attempted there's always an explanation of how, why and what. It's interesting that some of the transistor-based projects show how TTL (transistor-transistor logic) works. This is the basis of the simple digital system used to declare the colours in millions of TTL colour monitors.

Having a speaker and an earphone means that the project is able to demonstrate some quite interesting audio stuff too. the VCO or voltage controlled oscillator is the basis from which all synthesisers have evolved and it's possible to build a simple VCO using the kit.

Later on in the book projects 126 and 127 offer practical uses. A rain detector and water level buzzer can help you design irrigation systems and even provide a failsafe on your water tank. By project 130 (three-step water level indicator) you should be well on the way to understanding what some of the electronic components in your household equipment do and ready to design and produce a few circuits and projects of your own.

More to the point, however, you'll also be ready to tackle some of the Circuit City projects coming up in the next few months! ■

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THE PD COLUMN

Among the goodies from the world of Public Domain to come under the scrutiny of Adam Waring this week are a fun update of an 8-bit classic and a disk magazine packed with all the cheats you'll ever need.

Cheat! • ST • The South West Software Library • 1116

Fed up of being beaten time and time again by those blasted games? If you're a keen gamester but just can't get off the first level, then maybe you should cheat!

Cheat! is a disk magazine for the ST which lists hints, tips and downright underhand ways to get the better of those annoyingly difficult games so that you can see your name on the high score tables.

It's compiled by someone known only as Sid, but new contributors are welcome. So if you've uncovered a cheat which Sid doesn't know about, then there's an address where you can write in with your inside knowledge.

Each issue of *Cheat!* contains around 40 or 50 cheats. Softville's disk 1116 contains the first three issues. There are well over 100 naughty ways to win listed in total, so there should be something on at least one of the games in your own collection.

Douglas Rockmoor • ST • The South West Software Library • 1213

One of my most favourite ever computer games is *Boulderdash*. It's an old 8-bit game, that was extremely popular in the early to mid eighties. It's graphics weren't outstanding, even when you consider its age. In fact they were pretty atrocious. What it did have was playability – and bags of it.

Now ST owners can see what they have been missing. *Douglas Rockmore* is a 16-bit interpretation of the old classic. The object is simple – collect the diamonds on the screen and make your way to the exit.

The game is set in large underground caverns filled with mud, rocks and, of course, those diamonds. The problem is that the rocks are held up by the mud. If you remove the mud (which you do simply by walking through it) then the rocks will fall. And should they fall on your head...well, I'm afraid you're dead.

There are also guardians in the caves. These creatures follow preset patterns along the walls of the maze. For the most part they're safely trapped away in an enclosed area of the maze, but it's usually necessary to let them out to complete the level. That's where the fun really starts. There are plenty of other features to trick and trap you. But I'll leave those a secret for now.

Each cave forms a tough challenge to overcome. The diamonds are situated in difficult to reach places around the maze, and it takes a great deal of brainpower to work out exactly how to obtain to them.

But it's not just a brain game, as quick reactions are important too. Sometimes releasing a rock which will come tumbling down right on top of your little man will be unavoidable, and you need to be lightning fast to dodge out of the way.

There are ten levels to the game, and you can tackle them in any order you wish; if you get stuck with one particularly nasty puzzle then you can easily attempt another in the meantime. However, the incredibly addictive quality of the levels means that when you are killed you just have to go back and try it another way.

The graphics stay true to the original spirit of the *Boulderdash* games – they're as crap as ever. The ST's graphical supremacy hasn't been used to update the visuals of the game – and it's a good thing too if you ask me.

Nice touches have been retained, though. If you don't move your character for a couple of seconds, he responds by tapping his foot, as he waits patiently for your instruction.

The scrolling is smooth, but a bit on the slow side. It's quite easy to move off-screen and out of view. You then need to wait a couple of seconds for the scrolling to catch up with you. The game remains incredibly addictive, however, and should keep you going for many hours.

When you do eventually become tired with the game (it could happen, you know), you can always rid yourself of it simply by pressing the reset button. But wait! Your computer doesn't revert back to the desktop; instead another game suddenly and unexpectedly appears on the screen.

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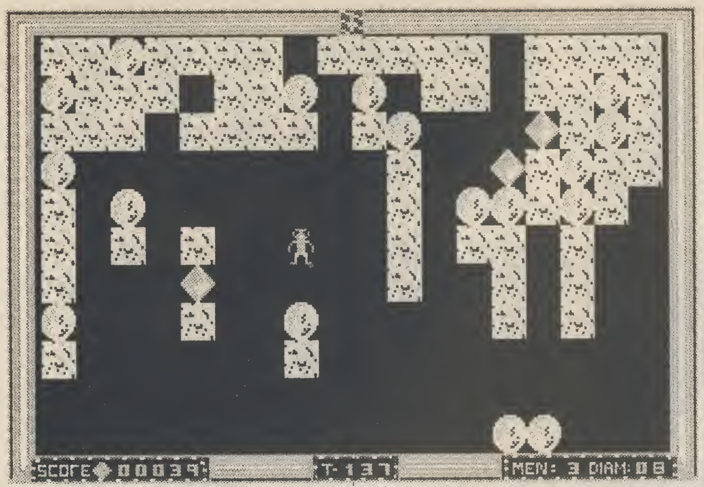

• Douglas Rockmore, available for the ST, is an update of the old classic **Boulderdash** *which retains many of its endearing original features like the dodgey graphics.*

This new game is reminiscent of the early arcade game *Galaxians*. An attacking force of aliens weave its way around the top of the screen spitting laser fire. Your little fighter has to shoot the lot of them out of the sky as they make their swooping attacks at you. The background is a scrolling sheet of stars, and the graphics are tiny. It's pretty simple stuff, but a welcome bonus tagged onto the main game.

Douglas Rockmore is a Budgie licenceware game. That means that for each copy of the disk sold, a small royalty goes to the programmer. Because of this, the price structure is different to the library's normal prices at £2.95.

PD NEWS

The Best in the West The latest catalogue from the South West Software Library, one of the biggest PD libraries for the ST, is available now and it's absolutely free.

Catalogue number six boasts nearly 50 per cent more titles than the previous edition. The 36 page A4 size newsletter has hundreds of utilities, games, graphics and WP/DTP programs listed amongst the 1,300 strong collection.

The sections are clearly laid out and it's easy to find what you want. A handy key has symbols that donate whether the disk is suitable to run on your machine (mono monitor only; one Mb required; not STE compatible – that sort of thing). There is an index at the back that lists programs and disks alphabetically to make it even easier to find what you're looking for.

You can obtain a copy of the catalogue by sending a large SAE to the library. Alternatively, request one with your order and the Southies will oblige. You should write to: The South West Software Library, PO Box 562, Wimbourne, Dorset BH21 2YD.

Budgie. Licenceware can be found amongst the catalogues of many public domain libraries. It isn't public domain though – instead it's sold like 'normal' software, only at very cheap prices.

With the 16-bit market concentrating predominantly on full price releases, programmers of good – but nevertheless budget quality – software have found it difficult to find publishers to market their games.

It is equally difficult for the programmers of such products to 'go it alone'. The expense of having games packaged, sorting out distribution, providing the necessary profit margins and so on makes it impossible to get this software into the normal retail channels.

What was needed was a cheap and effective distribution method, that could reach a wide buying audience. What better medium than the public domain library?

For years now they have been selling software for little more than the price of a blank disk, and have become well known to the public through word of mouth and adverts in the computing press.

So that's what groups like Budgie are doing. They have banded together and come to agreements with PD libraries. Their software now appears alongside PD software in libraries' catalogues.

The programs are bought in the normal way, but a percentage of the cost of the disk goes straight to the programmer who worked so hard in the first place, as with the *Douglas Rockmore* game I described earlier. What could be fairer than that? ■

WHERE TO GO

The South West Software Library, PO Box 562, Wimbourne, Dorset BH21 2YD. The SWSL can supply all types of software for your ST. Each disk will set you back £3. Send a large SAE for the latest edition of the library's bumper catalogue.

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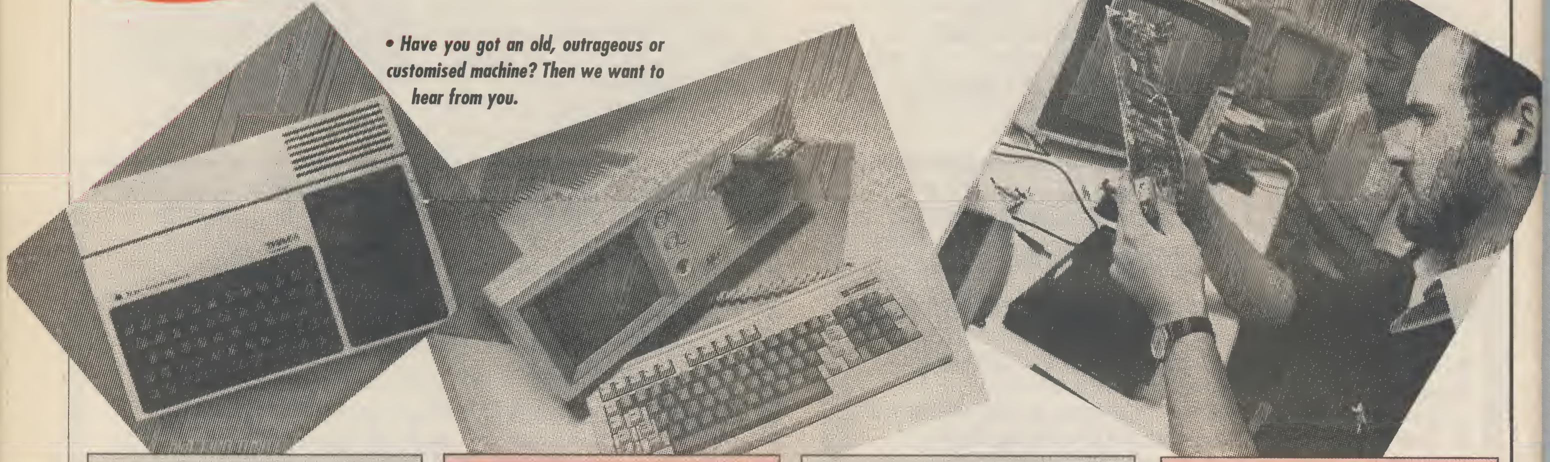

• Have you got an old, outrageous or customised machine? Then we want to hear from you.

CLASSICS

Orics, Enterprises, Video Genies, we love 'em. We are planning a major feature on some of computing's more elderly residents and we'd love to hear from anyone out there still using their pet PET or amazing Atom.

Send us a picture and details on what you are doing (or have done) with the machine and you could be in line for a prize.

BY THE WIRE

Every computer owner who knows how to use a screwdriver and a soldering iron seems to use them to attach all manner of gizmos to the back of their machine. We want to see your best efforts; what have you made a computer do with a couple of transistors and some Veroboard? A satellite link? Robot control? An oven timer? A prize awaits the best or most amusing.

CUSTOM KIT

You start with a simple 8-bit. You add more memory. You beef up the processor. Add another disk drive. And a new box. Now a hard disk. And a MIDI interface. A CD-ROM. A colour monitor. Before you know it your Spectrum's become a NeXT. How far has your machine gone? We want to see pictures and specifications of the most over-the-top customised machine in Britain.

ON THE CHEAP

Express readers love a bargain; you only have to see how many reader ads we get a week to work that out! But who has got the best deal? Did you pick up your PC for a ton? Or get an outrageous rate on an Amiga? We want to know about the best bargains you've ever seen (not just computers but peripherals and software too) for a feature on cut price computing.

WHAT'S THE USE?

Computers aren't just for playing games, there are hundreds of more serious uses you can put one to, and some off-the-wall ones as well. So if your CPC is doing the air traffic control for Heathrow or running the reactor at Sizewell A then drop us a line.

If your computer is a bit unusual, drop us a line with the details and a picture to: Outrageous Machines, New Computer Express, 30 Monmouth Street, Bath BA1 2BW. Include a stamped self-addressed envelope if you want your pictures back. The most amazing entry in the five categories we receive by January 20 will each win a brand new £50 note.

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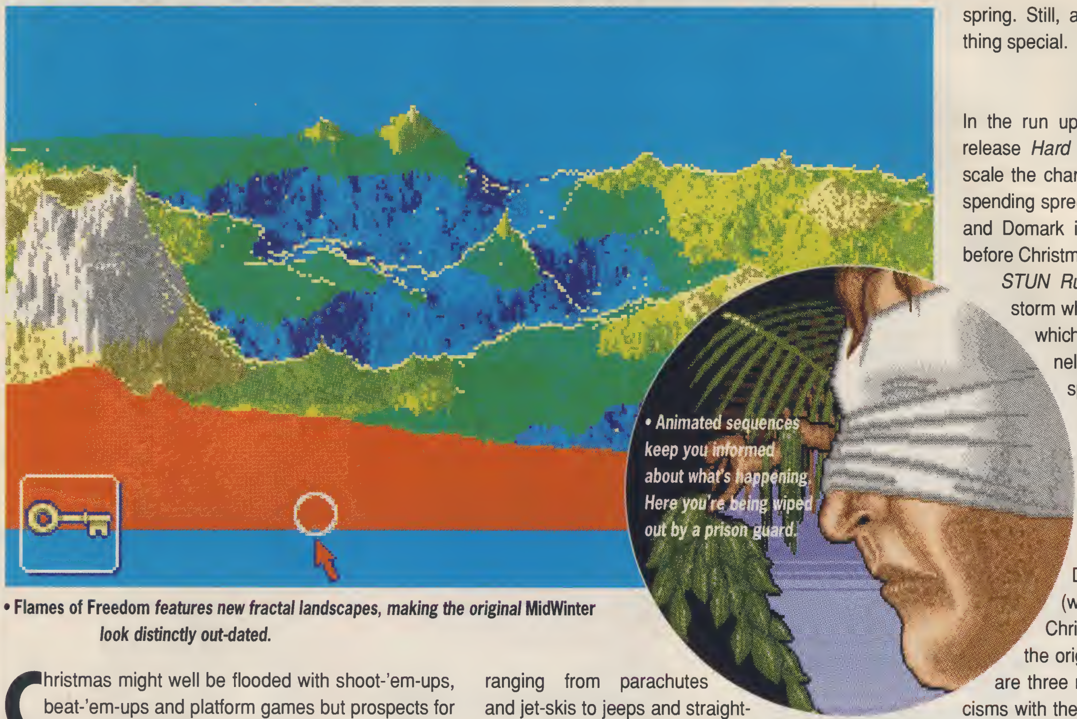


• Animated sequences keep you informed about what's happening. Here you're being wiped out by a prison guard.

• **Flames of Freedom** *features new fractal landscapes, making the original* **MidWinter** *look distinctly out-dated.*

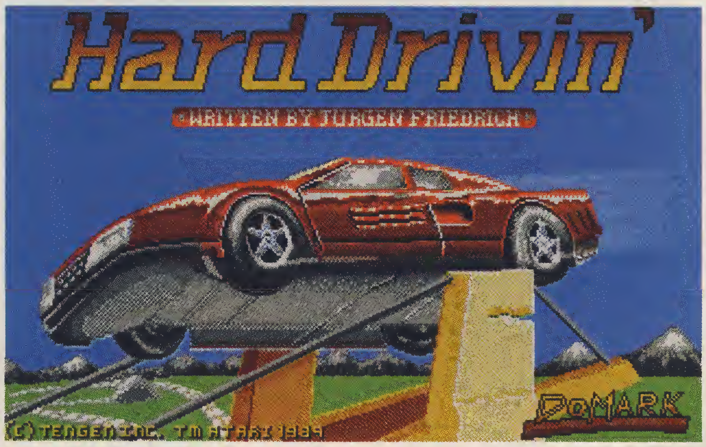
Christmas might well be flooded with shoot-'em-ups, beat-'em-ups and platform games but prospects for the post-Christmas period are promising if the plans of programming team Maelstrom are anything to go by. Its last game was *MidWinter,* released in March, and since then it's been busy working on a follow-up. *Flames of Freedom* (as it's now been called) is on schedule for a February release on ST and Amiga formats with a PC version following a month or so later.

The game bears only a slight similarity to the original *MidWinter.* One of the biggest differences is that the snow has melted so that the landscape is green rather than white. Instead of being played out on a single island, the game now spans an entire map of islands and each one can be tackled individually. The ultimate objective is to seize enough islands to prevent the enemy brigade from working its way across the map. To take an island you first need to solve a mission specific to each island – finding someone or blowing up a building, for example. These missions differ depending on the strategic position of the island.

The appearance of the game is remarkably similar to the original *MidWinter.* 3D polygon landscapes are employed in the new game, effectively shaded and detailed to give a realistic feel to the action.

Whereas *MidWinter 1* never let you to see people or vehicles (they were always located inside buildings), this new game has resolved that problem by presenting them as shaded polygons. To travel around the landscape you have various means of getting around ranging from parachutes and jet-skis to jeeps and straightforward walking.

A series of animated sequences which present the story gives the game a feeling of continuity. For example, if you get thrown into jail you can bribe your way out, fight or choose to seduce your captor. If you select the wrong option your head is booted in and this event is presented through a short comic strip-style sequence.



Fractal landscape maps, depth of gameplay and intense attention to detail are the added extras which make this look like a potential chart-topper throughout spring. Still, at an astonishing £30 you expect something special.

A STUNNING RIDE

In the run up to Christmas, Domark had planned to release *Hard Drivin' 2* and *STUN Runner* in a bid to scale the charts and make heaps in the big Christmas spending spree. Unfortunately, both have been delayed and Domark is in a mad rush to release the games before Christmas.

STUN Runner is based on the futuristic arcade storm which puts you in the middle of a trash can which then flies at great speed through tunnels. In the arcade game it was the amazing speed of the twists and turns in the coloured tunnels which made it such a hit. If the programmers have managed to maintain that speed in the home micro versions then we have something very special in store.

Hard Drivin' 2 is the follow-up to Domark's '89 Christmas bid *Hard Drivin' 1* (which eventually came out after Christmas). The game looks very similar to the original *Hard Drivin'* game except that there are three new tracks incorporated. One of the criticisms with the original *Hard Drivin'* was that there were too few tracks to play on. This problem has been resolved in the follow-up by the addition of a track designer. This enables you to create your own tracks, piecing together stretches of straight road, curves and banks to produce a personalised riotious course.

If you enjoy the idea of playing against a friend, *Hard Drivin' 2* also comes with a datalink option. This enables you to link your ST to an Amiga or PC (or vice versa) and compete on the same track as your friend.

Unfortunately, the German programmer behind *Hard Drivin' 2* went down with chicken pox just before the game was supposed to be completed so the planned pre-Christmas release had to be delayed until the new year.

Versions of *Hard Drivin' 2* are due out on ST, Amiga and PC formats just after Christmas. All 16- and 8-bit versions of *STUN Runner* are scheduled to appear by the time you read this. ■

TOP 10
SIXTEEN-BIT GAMES

1	NE	Teenage Mutant Hero Turtles	Mirrorsoft	ST AG PC
2	5	Golden Axe	Virgin	ST AG
3	NE	Robocop 2	Ocean	ST AG
4	2	Lotus Turbo Challenge	Action 16	ST AG
5	1	F-19 Stealth Fighter	MicroProse	ST AG PC
6	4	Powerpack	Beau Jolly	ST AG PC
7	3	Kick Off 2	Anco	ST AG PC
8	12	Supremacy	Virgin	ST AG
9	6	M1 Tank Platoon	MicroProse	ST AG PC
10	9	Wheels Of Fire	Domark	ST AG

For the week ending 1st December

ST – Atari ST Ag – Commodore Amiga PC – IBM PC or compatible
Chart compiled by Gallup. © European Leisure Software Publishers Association.

This week I have some top tips on completing ***Operation Stealth*****, Delphine's follow-up to the hit game** ***Future Wars*****.**

When the game begins go to the newpaper stand and examine the return coin slot. Use the coin you find in coin slot. Now head straight for the toilet room and operate the briefcase. Then take the pen and the American passport. Operate the calculator and take the unused passport. Operate the up arrow button until the correct passport appears, then use the unused passport on opening. Press the red button and operate the briefcase. Go to the passport control officer and use the passport on the passport controller. Go to the welcome hostess and say welcome hostess. Examine the telegram then move left. Go to the guard and use the airline ticket on him. Move to the first baggage carousel and examine the baggage which says Mr Marinez. Take the baggage then operate it. Go to the bathroom and operate the

GAMES WEEK

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GAMES REVIEW

Teenage Mutant Hero Turtles

from Mirrorsoft
- **ST and Amiga £24.99**
- **Spectrum £12.99**
- **Amstrad £10.99**

It's always an ominious sign when a software publisher doesn't send you a copy of its game. Mirrorsoft promised to forward me an ST version of the *Turtles* for two weeks before I finally went and bought a copy for myself.

The game puts you in control of the *Turtles* where your task is, unsurprisingly, to rescue your journalist friend, April O'Neil, from the hands of the evil Shredder. Before the game starts you select the Turtle with which you wish to play. This Turtle can be changed during the game so you can make the most of the different fighting weapons available to each Turtle. The game is arranged as a series of levels, each split into two sections – above ground and a below ground sub-level.

In the above ground section you're treated to an overhead view of urban New York with manhole covers located in the middle of the roads. You must dodge offending vehicles to dive down the manholes and explore the sewage system.

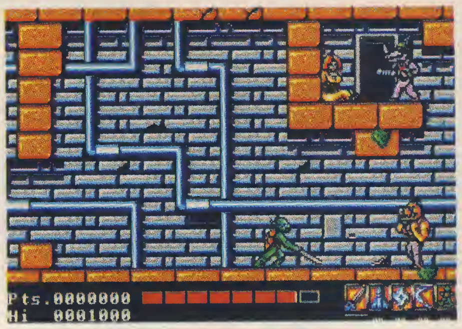
Once below ground the action switches to a side-on, horizontally-scrolling platform level. Large sprites of your Turtle can then be directed through the sewage system where the objective is to attack everything that moves. With careful manipulation of the joystick, you can leap unnaturally into the air, roll into a ball and bounce through the sewers or whip out a weapon (a different one for each of the four Turtles) and bash everything in your path. You may need to go down into several different sewers to complete a level. At the end of one of the underground sewage systems is April O'Neil, held captive by Shredder's henchmen. It takes considerable effort to kill the bad guy standing just in front of April and if you do succeed in obliterating him, his buddy just drags April off to the next level.

Besides the sewers you can also enter buildings or even go for a swim. In these scenes the objective is exactly the same as the sewage tunnel screens where you must whack everything that comes your way.

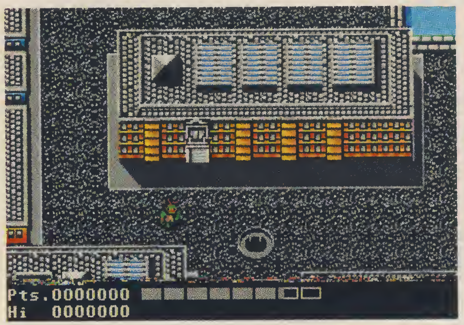
A handy save game option enables you to stop the game and return to it later in exactly the same position. Unfortuately this isn't available on the Spectrum or Amstrad CPC versions.

The 8-bit versions of the *Turtles* are competent enough. On the CPC it makes a good kids' game while on the Spectrum it is surprisingly absorbing. However, the 16-bit versions are a distinct let-down, offering little more than those on the 8-bit systems. Scrolling is so abysmally jerky that it's awkward keeping your eye focused on the real action. The backdrops don't compensate much – they're brightly coloured but in such a way as to make it difficult to pick out some of the bad guys. Although the main playing sprites are reasonably large, the animation used in their movement leaves much to be desired.

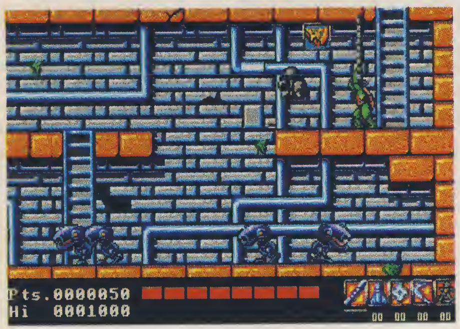
This is far from being a radical concept, dudes. The problems with the game aren't restricted to the visuals. If you can survive poor scrolling and animation you then need to tolerate thoroughly unexciting gameplay. The structure of the game and the unexciting bad guys mean that the happiest moment of the game comes when you reach over for the power switch. ■



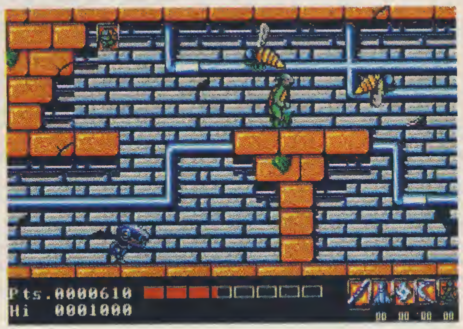
- *At the end of the level try to rescue April.*



- *You're above ground and frantically looking for a manhole to dive down.*



- *Whoops, made a bit of a mistake there. The place is teeming with Shredder's henchmen. Now what do you do?*



- *Roll into a ball and you can bounce past the bad guys without injury.*

PLAYING TIPS

razor, using the electric socket.

Now go to the passport officer and use the original passport on him. Walk left and get in the taxi. Examine the American passport and take the bench of notes. Now go to the bank and use the bench of notes on the bank clark. Use the coins on the florist and take the red carnation. Use the red carnation on John then go to the park and sit on the bench.

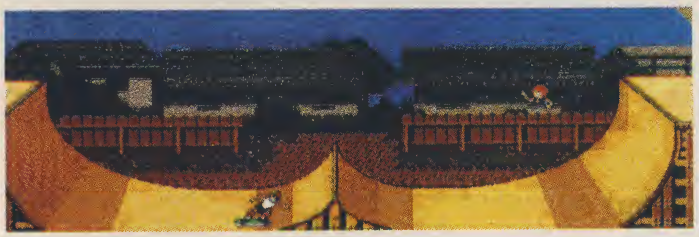
Move quickly to the right and go to the bank. Use the card and key on the bank clark then go downstairs and enter the volt. Use the key on the safe (bottom, right). Operate the ground, use the ropes on the ground then operate the ground again. Examine the part of the wall where the breeze is coming from and operate the pickaxe three times on the wall. Very carefully swim under and over the rocks, remembering to watch the oxygen level at the top of the screen. When you've finished this you come out at the florists. Walk to the beach and talk to the man. Use the coins on him and go to the hotel. Press the button and go to level two then walk to the third floor. Go to the last door and operate it. You meet Julia and Otto. They kidnap you and put you on a boat.

Operate the very first sentence on the bracelet. When they throw you off of the boat you reach the sea bed. Operate the bracelet again then swim over to Julia and operate her. When you reach the surface one of Julia's friends picks you up and takes you to their hideout. You now have to go through five levels of mazes. These are solved by finding the key and going back to the stairs. Operate the door and go into the office then go over to the statue and operate the statue's arm. A safe appears. Use the little box on the safe door and turn the box on. Operate the up and down arrow until the first light on the box comes on (if two lights come on this means there is a double figure combination), then press the lock combination button to move to the second figure. Repeat this process for the remainder of the three digits.

Well, that's enough help to be going on with. ■

CONSOLE ZONE

In this week's jaunt around the world of console gaming Richard Frederick has news about golfing and skateboarding sims, a couple of hi-tech shoot-'em-ups and the usual essential playing tips.



• **Skate or Die 2:** *doubling up on the skateboarding action.*

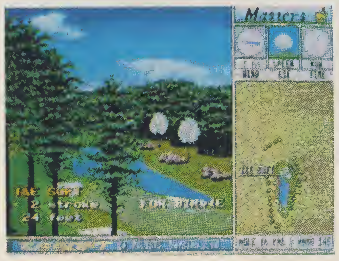
NES

Now you can jam on the ramp at your own leisure. *Skate or Die 2 – The Search For Double Trouble* from Electronic Arts in California is the "twisted skate adventure with the ultimate ramp". What does this mean? Another skate-boarding sim has just hit the decks! Double trouble is in the house!

Electronic Arts is currently offering *Skate or Die 2* stickers and tips to video skateboaders in America.

NINTENDO SUPER FAMICOM

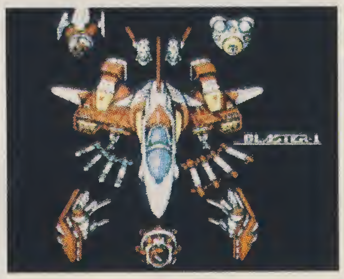
T&E Soft in Japan is to release a new 3D golf simulation on the Super Famicom utilising its Polysys (Integrated 3D Processor) graphics system. The game has been licensed by the Augusta National Golf Club. T&E Soft was the winner of the Login Global Award of 1990 at the European Computer Leisure Awards back in March.



• *Golfing action due on the Famicam.*

SEGA MEGADRIVE

Do you fancy flying a futuristic fighter laid to the limit with the latest hi-technology weaponry and drive propulsion systems? *Aero Blasters* from Kaneko in Japan is a four-megabit cartridge featuring the Raid Unit – the Trouble Specialty and Aero Blaster team.



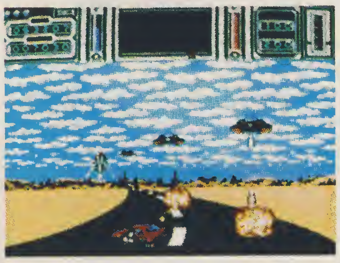
• **Aero Blasters:** *the Raid Unit make use of the latest hi-technology.*

You can take on the role of Charles K, Holy or Mik Takeda through a smooth-scrolling multi-mission to blast enemy mecha to bits. *Aero Blasters* is also available on the PC Engine courtesy of Hudson Soft.

NEC PC ENGINE

Hudson Soft, the Japanese software developer at the cutting edge of games technology, has converted Bullfrog's *Populous* onto the PC Engine. This overwhelmingly successful strategy arcade game is now available on the Sega Megadrive and Super Famicom and a Sega Master System version is also currently under development.

Hudson Soft is the most prolific PC Engine games developer with *R-Type* and *Gunhed* already under its belt. *Populous* on the PC Engine will be released in Japan early next year for 7800 yen (£31).



• **Fire and Forget II:** *more explosive action that you won't forget in a hurry.*

SEGA MASTER SYSTEM

"Prepare to experience the most extraordinary arcade game ever designed," boldly proclaims French games house Titus. *Fire & Forget II* is a five-level car racing shoot-'em-up. You're the pilot of an all powerful combat vehicle in hot pursuit of terrorists.

Fortunately you have an advantage in the form of the ability to take to the air and out-manoeuvre your enemies. Along the way you can pick-up extra weapons, ammunition and fuel. You'll have to work your way through the entire convoy and destroy the leading vehicle before the 'Ultimate Explosion'.

Fire & Forget II is a two-megabit game featuring 12 tunes, six-level parallax-scroll and a screen speed of 50 images per second.

NINTENDO GAMEBOY

Navyblue 90 is the latest game from the Japanese USE Corporation. This 3,500 yen (£14) cart is basically an arcade adaption of the ageless paper-game Battleships.

It does feature some unusual ordnance, though. Have you ever seen missiles brandishing sharp pointed teeth and a pair of boxing gloves? You will if you buy *Navyblue 90*! ■

PLAYING TIPS

ATARI LYNX
Special thanks to David Will Henderson from Scotland for this *Blue Lightning* tip: Toggle on afterburners as you take off in Mission Four. You'll get an extra bonus on completion of the mission. Good luck with the fanzine, David!

NINTENDO ENTERTAINMENT SYSTEM
Go straight to the USSR vs Holland final in *Goal* with this passcode: FTXAREZC GOLGPIMB

NEC PC ENGINE
Widen your Power Wing in *Dragon Spirit* by looking in the large pillar behind the wall on stage seven.

SEGA MEGADRIVE
Destroy all four bases in under 60 seconds on any *Thunder Force II* vertically-scrolling stage for a 250,000 bonus points.

NINTENDO GAMEBOY
Have you got any hints for *Super Mario Land*, *Batman* or *Tetris*? Send them to the usual address.

SEGA MASTER SYSTEM
Kill the phoenix boss in round one of *Cloud Master* by hitting it 15 times on the beak.

YOUR ZONE

We're looking for the greatest video game players in the country. Send us your top scores on the latest games releases.

Have you found any hidden features in your new games? What do you want from the next generation of console hardware and software? We want your views on any subject connected with console gaming.

We're also after your tasty tips, crafty cheats and hot hints. So if you want to see your name in print write now to:

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THIS WEEK'S HIGH CONSOLE SCORES – CAN YOU DO ANY BETTER?

MEGADRIVE			**GAMEBOY**		
Eswat	277,900	Alex Taylor	*Batman*	424,060	Peter Worth
Forgotten Worlds	1,843,000	Wai-Yin Man	*Super Mario Land*	474,170	Jay Lee
Ghouls 'n' Ghosts	750,000	Tim Walker	*Tetris*	396,064	Peter Worth
Golden Axe	414.5	Alex Taylor			
Moonwalker	1,020,360	Nicholas Wells	**LYNX**		
Rainbow Islands	1,760,980	Nicholas Wells	*Blue Lightening*	240,950	David Will Henderson
Super Shinobi	5,890,200	Wai-Yin Man	*California Games (BMX)*	798	Nicholas Wells
			California Games (Footbag)	100,743	Nicholas Wells
NINTENDO ENTERTAINMENT SYSTEM			*California Games (Halfpipe)*	32,025	Nicholas Wells
Super Mario Brothers.	510,660	C. Heefer	*California Games (Surfin')*	8,100	Nicholas Wells

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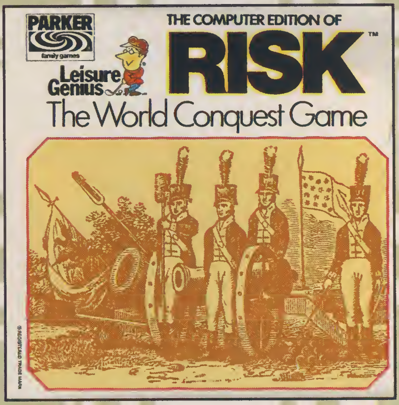
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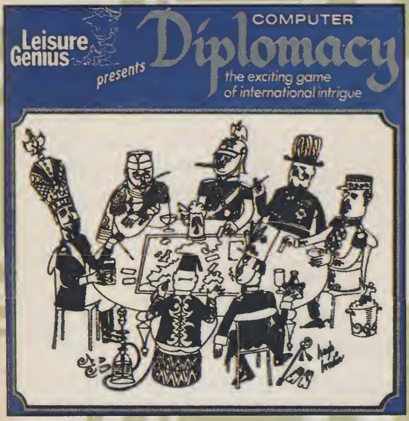
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SCRABBLE DE-LUXE	●	●	●	●	●	●	●	●	
MONOPOLY DE-LUXE				●	●				
CLUEDO MASTER TEC	●	●	●						
DIPLOMACY	●								
RISK	●	●	●	●	●				

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IT'S A FREE FOR ALL

1990 was a vintage year for public domain software – the programs they give away for nothing. Adam Waring surveys the 16-bit offerings...

The 16-bit machines have dominated the public domain scene throughout the year. Machines like the PC have had a head start, with PD software being available since the beginning of the last decade, but new products have slowed to a trickle compared to the avalanche of the ST and Amiga programs that have been released in the past 12 months.

So, we take a retrospective look at the best in16-bit PD that has featured in the *Express*' PD Column in the last year (well, in the last six months actually – I started writing the PD Column in issue 85, 26 issues ago).

ATARI ST TOP TEN

1: Planetarium (issue 97; South West Software Library)

Whether you're a star gazer or not, *Planetarium* is a fascinating piece of public domain. It's like having the whole Universe in your living room. The program allows you to scan the heavens from the comfort of your own armchair with the central heating turned up full.

The program has accurate information about all the heavenly bodies visible to the naked eye (and a good many that aren't). You can choose the time and place from which to do it too. On start up you're prompted to set the date and time – so you can look skywards from any point in history, past present or future. You're not restricted by geographical bounds either – you may view the stars from any location on Earth, from the North Pole to the middle of the Pacific Ocean.

As well as the stars, the Sun, Moon and planets all feature. They can be emphasised by having their symbol float alongside them. The constellations too can be monitored with a three-letter abbreviation moving along with them. Everything you can see can be enquired about. There's tons of information hidden away inside the program, giving details about all the planets in the field of view.

There are so many nice touches too. When the moon is on screen it is shown in its current phase. When the sun rises above the horizon the sky turns from black to bright blue. Both colour and mono monitor users are catered for.

2: ZX81 Emulator (issue 93; Sphinx Software)

The ZX81 was the one that started it all. It transformed the computer market from the domain of bearded hippies locked away in the university's computer room, into the mass market that we have today.

The machine was black, small and boasted a palette of two colours (black and white), had no graphics or sound apart from the hum of the mains adapter, and had a massive 1K of memory, expandable to 16 gigabytes, sorry, kilobytes.

The emulator lets you run anything that the ZX81 could run. It has a copy of the 81's ROM built in to the software, as well as valuable optional extras – including a joystick port and memory expansion were much sought after on the real thing.

Fast disk loading has been implemented. As far as the programs are concerned they behave as if it were waiting to load from tape, but thankfully the user sees it all happen much more quickly.

A library of ZX81 programs are included on the disk, so you play your old favourites immediately.

3: Core Wars (issue 88; South West Software Library)

Core Wars is an old programmers' game. It pits the skills of the program writers against one another. A simple programming language is used to write the routines. They are placed in an area of memory and a master control program executes one instruction from each program at a time. The object is for the programs to annihilate each other; to corrupt each other's code and render them useless.

Once the programs have been designed and put into the electronic arena, the programmer is powerless, and can only wait for the results of the battle. It really is the survival of the fittest.

The language has just ten instructions, but complicated and devious programs can be created with them. A huge library of finely tuned warrior programs have been created, so you can watch them fight it out without even having to write your own.

4: Vanterm (issue 92; South West Software Library)

Vanterm has virtually everything you could ask for in a comms package. It's controlled from the GEM environment that ST users are so used to, but has the also has keyboard hot-keys so that the experienced user can get to the functions they want quickly and without the fuss of drop-down menus.

It's easy to get on-line, even for your very first go with the package. The program is so friendly that you can hardly go wrong when connecting up to a bulletin board. That's not to say it doesn't have power though – far from it.

Vanterm is very comprehensive and includes features that you'd normally only expect to find in the top commercial packages.

5: Mouse-Ka-Mania (issue 104; Softville Computer Supplies)

Don't you get bored of the same old pointer on the ST? The arrow and bee icons are a bit tedious. *Mouse-Ka-Mania* changes all that. It allows you to fashion your own icons to replace the dreary old desktop doings.

The restyled pointers are designed on a 16 square grid. You can really let your imagination run riot – it's up to you what roams your desktop when you use this program. You can even tag a pointer to a series of separate frames, giving you instant animated pointers.

There are loads of examples already designed, so if you have the artistic ability of a sloth that's had its limbs removed, you can still select pretty new pointers.

6: Douglas (issue 111; South West Software Library)

Douglas is based on a very old, but nevertheless brilliant game called *Boulderdash*. The game world consists of a hostile underground terrain, littered with mud, boulders and of course monsters.

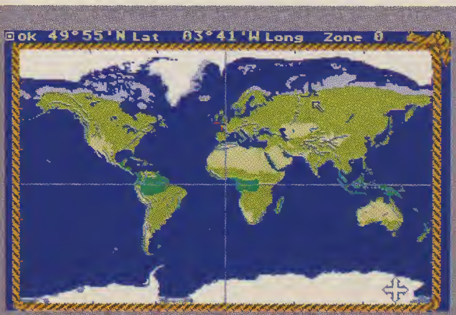
To make it all worthwhile, there are also plenty of diamonds there for the taking. Our hero's quest is to stuff his pockets full of the glittering gems and reach an exit before time runs out.

7: ST Writer (issue 96; South West Software Library)

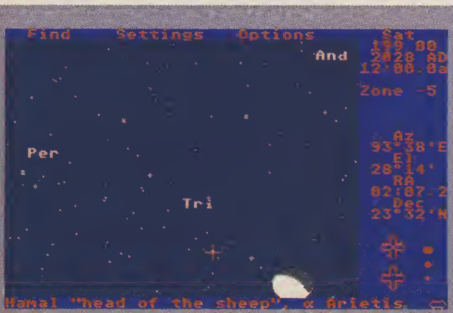
One of the most commonly used programs by computer users is the word processor. Letters, reports, even the PD column are banged out on a computer keyboard.

Word processors have so many advantages over the traditional typewriter. Nothing is committed to paper until you're ready for it. So all the spelling mistakes can be corrected, and you can get rid of that terribly constructed paragraph before anybody else ever sees it.

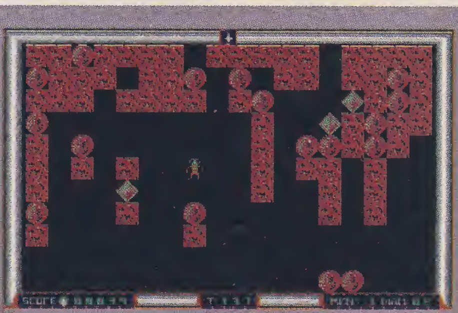
ST Writer doesn't have features that'll send you reeling with excitement. It does have everything you'd expect though. You can chop and change text as you wish, centre and justify it, and set codes so that your printer can italicise the points you want to emphasise. All in all it is a perfectly useable program, and it's free.➤



• **Planetarium:** *pick your spot in space and time...*



...then view the sky.



• **Douglas:** *Boulderdash but for nothing.*

8: Expander (issue 99; Elmsoft)

Expander is one of those programs you'd probably only ever use once, but on the occasion that you do use it, it becomes the most valuable thing in the whole world.

If, like me, you bought your 520ST a few years ago, you'd have bought a machine with a single-sided disk drive. Now the time comes in every young man's (or woman's) life, when a half-meg drive just isn't enough. It's time to expand.

When you do though, you realise that the collection of software you've built up over the years only makes use of one side of the disk. You can still use them, but it's just such a darned waste of space.

What *Expander* does is this: it re-formats your single sided disk to double sided – without effecting the existing data! You instantly double the size of your collection without the loss of a single byte, saving you pounds! Clever, innit?

9: Mix 'n' Match (issue 109; The Other PD Library)

Mix 'n' Match is a dead simple concept: turn over card and try and match two of a kind together. The difficulty lies in trying to remember all the cards you're presented with – it's played with 32 in total.

It's a two player only game, so you need to find a willing partner to challenge. Apart from that though, it's jolly good fun.

10: Accessory Compilation (Elmsoft; issue 100)

Desktop accessories are mighty useful things. Almost at will you can stop what you're doing, and load something else for a few minutes. Then, when you're finished you can go back and resume the previous task.

Accessories lend themselves to a variety of tasks. Games, utilities, almost anything in fact, that you'd find in fully fledged programs.

This compilation has 80 of the things on two double sided disks. The only problem is choosing which ones to install!

COMMODORE AMIGA TOP TEN

1: Ncomm (issue 92; Amiganuts)

If it's comms you're into then *Ncomm* is for you. It's a fully blown comms package and will let you get in touch with the world via your keyboard.

The package is powerful enough to contain every feature you could rightly expect. It'll allow you to get on line in no time at all. One of the extra-useful features is a built in phone book – you can store the numbers of your favourite bulletin boards.

2: Virus Killers (issue 110; Dozsoft)

Viruses are vicious things. They can wipe out your entire collection of software that you've built up over the years in a matter of seconds.

So it's essential to protect yourself. Virus killers do just that, and this disk has four of them to make the insides of your Amiga a safe place.

All the programs are useful, and each has a slightly different way of going about hunting down those evil programs. Between them the packages contain all you need to search and destroy even the most deadly virus.

3: NorthC (issue 96; Amiganuts)

If you fancy taking the plunge of writing your own programs, then C could be the ideal choice. C is very popular when it comes to writing commercial applications; it's far more powerful than high level languages like BASIC, but doesn't get bogged down with the tedious technicalities of learning assembler.

In fact many commercial applications are written in C. NorthC provides the editor and compiler, in fact everything you need to write your own programs.

> ***Viruses are vicious things. They can wipe out your entire collection of software in a matter of seconds, so it's essential to protect yourself.***

4: C Manual (issue 96; Amiganuts)

If you're to take C seriously, then you'll also need a good tutor. *C Manual* comes on three disks packed with everything you ever need to know about C.

It's as good as any book, maybe even better. Only a software-based package can take you through ready made examples. Books tend to rely on boring listings that take hours to type in. To test out these programs you don't need to be a perfect typist; all you need to do is load them in.

It takes you through your first faltering steps through to the most advanced examples. Obviously it's not the sort of thing you can pick up in the first hour, but give it a couple of weeks and who knows...

5: Star Trek (issue 93 & 95; Amiganuts)

Star Trek may be an old formula, but this Amiga interpretation is excellent. Off you go, Star Trekkin' around the Universe, you're in charge of the *Enterprise,* and have to boldly go where no man has gone before...

The game sets you on a mission to explore deepest space, and you have to take care of all aspects of the vessel. The original version reviewed had a German manual, but a couple of issues later, a copy with the English instructions turned up.

6: Popeye Meets the Beach Boys (issue 98; Crazy Joe's)

Heaven knows that demos are the pretty tedious examples of public domain software. All they do is produce wibbly scrolling messages that give you a headache after a while. Well, not all demos. Some can be a source of real amusement, such as the *Popeye* demo.

The spinach-gorging sailor meets up with those Californian pop stars of the Sixties to cut a record, with excellent results. It opens with the Boys singing the backing vocals to their classic *Wouldn't it be Nice* when Popeye cuts in with the lead! It goes on with Bluto doing his bit with David Bowie... well, it really does need to be heard to be appreciated.

7: Sid (issue 85; Amiganuts)

Sid provides a sparkling new front end for the Amiga's operating system. It replaces the cumbersome CLI (Command Line Interpreter – even the name's unfriendly). The program does everything that CLI does, just in a much nicer, more hospitable way.

Instead of having to remember all those tedious commands, everything is listed for you at the bottom of the screen. You just move the mouse, click, and your wish is its command.

Sid provides the simplicity of Workbench with the power of the CLI, and very well it does it too.

8: Games Disk (issue 108; Capricorn Computers)

A compilation of four games that simply must not be missed: *Pipeline, Jeopard, Mastermind* and *Sokosky.*

Pipeline is a variant on the popular arcade game *Pipemania.* A pipeline has to be built to contain the flow of some unknown oozing substance that makes its way along a set of pipes. You put those pipes down, but you have no control over what pieces are coming your way. You can see the next five segments that you'll be receiving, and it's up to you to place them where they'll come in useful later on.

Jeopard is a computer version of the brilliant board game *Risk. Mastermind* plays the old code cracking game. The computer sets the code, and you have to break it. The game runs from the Workbench, and can be clicked on or off with ease. It's useful for killing boredom in between more serious work.

Sokosky is a simple puzzle game. You have to move tiles by pushing them from one place to another. A simple, but deceptively difficult game.

9: Colouring Book (issue 95; Page One PD)

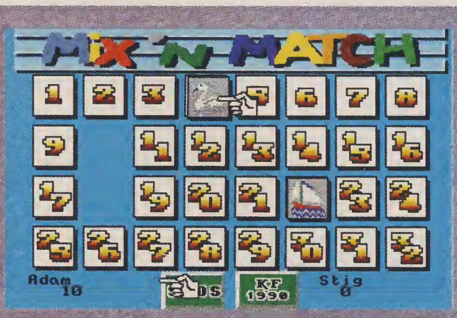
Colouring Book acts just like the old fashioned paper and crayon variety, with none of the mess. An outline of a picture to be coloured in comes up on screen, and you colour parts of it in with a mouse press.

There are plenty of pre-drawn pictures to vent your artistic bent on, and you can import any others you may have drawn from other art packages. Once on screen you can colour them in with a palette of 10 colours. For kids it's brilliant.

10: Silent Fantasy (issue 102; Lorenzo's Domain)

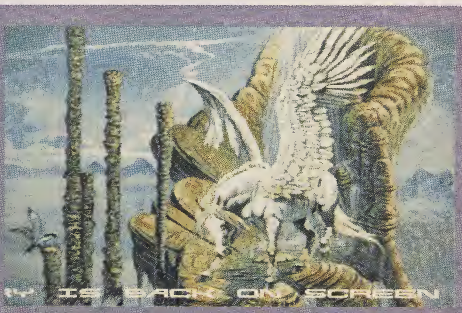
Everyone knows that the Amiga is the machine when it comes to graphics. But if you want to really show what your computer can do then the *Silent Fantasy* slideshow can bring a grown man to tears. The program has some of the best hand-drawn art you'll see anywhere.

Most of these programs are generally available in all the public domain libraries, although we have indicated a library which definitely stocks them in each case. Check in Shopping Express for suppliers details. ■



• **Mix 'n' Match:** *surprisingly challenging.*

• **Star Trek:** *boldly going for free.*



• **Silent Fantasy:** *excellent graphics.*

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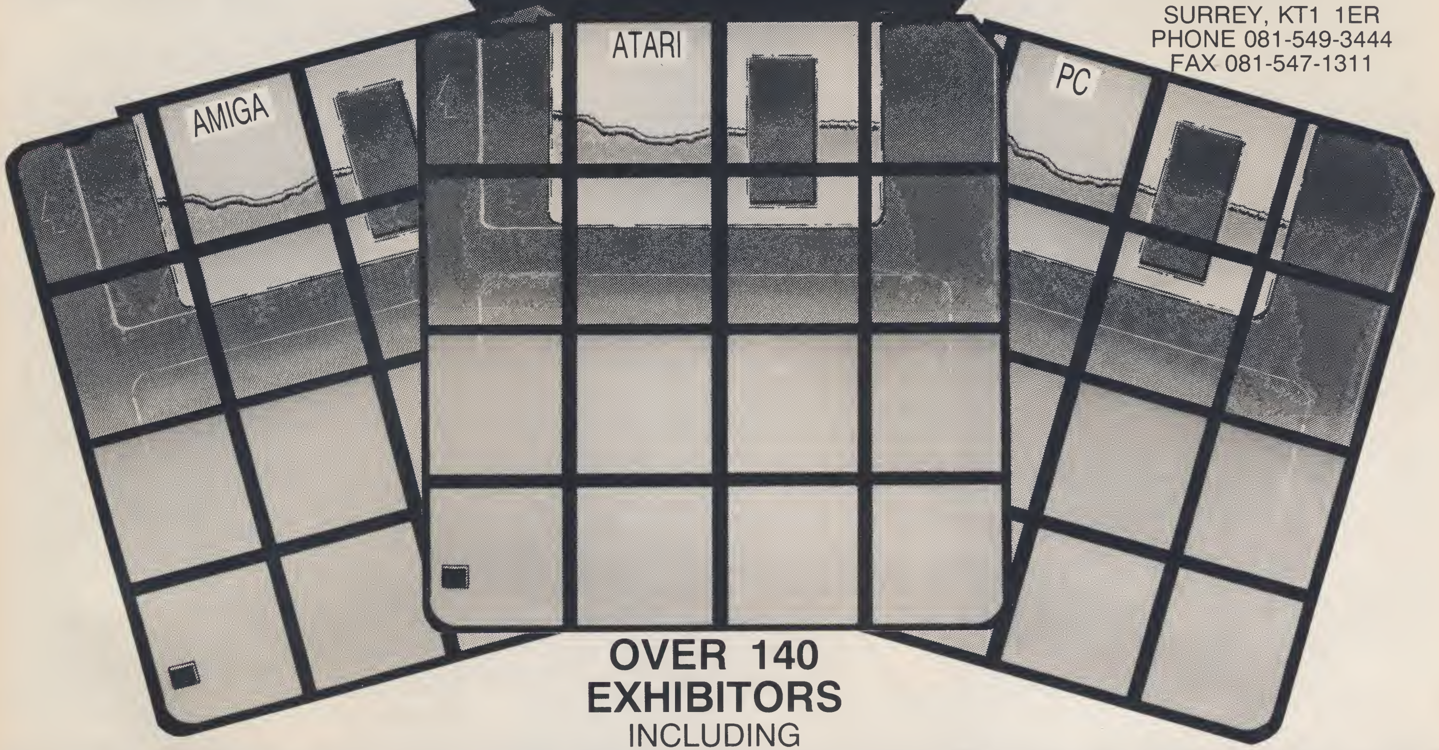

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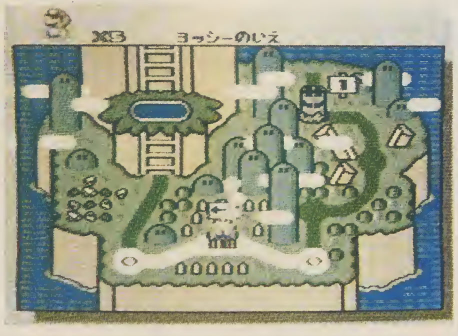
FAMILY FORTUNES

Tony Takoushi casts a fond glance over Nintendo's 16-bit Super Famicom.

After much rumour and speculation Nintendo launched its 16-bit console on to the Japanese market at the end of November. It is called the Super Famicom and it represents the state-of-the-art in console technology.

The Super Famicom retails for 25,000 yen (around £95) and two games were launched with it: *F-Zero* and *Super Mario World* which sell for around £30 each.

The console is technically very sophisticated with dedicated processors and custom chips. It can do hardware scaling and rotation – the only other game system with scaling is the Lynx from Atari, but that doesn't have rotation. Scaling a screen graphic and then rotating it is common in powerful arcade machines like *Afterburner* and *Power Drift* – but on a £95 home console?



• **Super Mario World:** ***the latest in the long-running series.***

THE MACHINE

The console is of dense grey plastic with a solid weighty feel. The look and build reek of quality and much thought has gone into the design. The top of the unit has the power On/Off slider with Eject and Reset buttons. The cartridges slide into the top through a flap. To the rear are power jack, ch1-ch2 (for TV tuning), RF output and a multi-out port for connecting a composite or SCART monitor. Underneath is a flip-off lid revealing a 28-pin port. Peripherals are as yet unannounced.

The game cartridges are similar to Megadrive carts and boast megabyte data capacities. The two joystick ports are recessed, facing front with non-standard 7-pin horizontal sockets, so you have to use the pads supplied. These have four fire buttons plus Select and Start buttons and recessed left/right buttons for extra control.

There's no power supply with the unit but you can buy one separately or use the power supply from a Nintendo Control Deck. The only video output is to RF (standard TV); you can run the console on composite or RGB monitors but the extra cables will cost around £10.

THE GAMES

F-Zero is a futuristic racing game which uses the hardware scaling and rotation to the full. As you race other cars the screen literally rotates as you go around corners, and the road ahead snakes its way towards you. The exceptional aspect of this game is that all rotation and scaling is silky smooth and ramming into the side of the road leaves your eyes feeling concussed!

Super Mario World is the latest in the Mario series. It is a worthy follow-up with much of the same platform jumping and coin collecting. The music and sound effects are truly superb (see the tech spec). Again there are some original touches and a depth of play that is coupled with instant playability to ensure the Mario series' continued success.

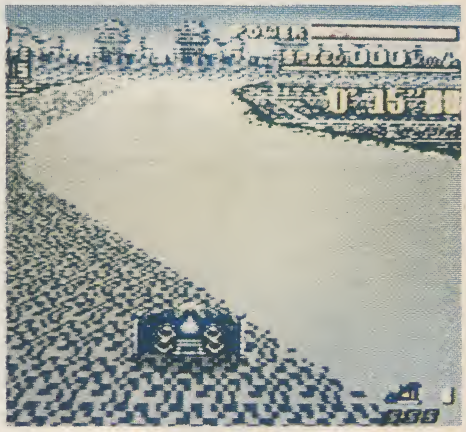
Imageworks' *Bombuzal* is due next month and the IREM arcade classic *R-Type* is due early next year.

THE COMPETITION

There is only one machine that can boast a better technical specification and that is the Neo-Geo, but even so it's in just one area – it has more on-screen colours (256 as against 128). In all other respects the Super Famicom out performs all the other consoles on the market today.

Logically Nintendo should clear up as soon as its machine reaches Europe and the US. But things do not always work logically in the consoles world! The PC Engine was launched four years ago and technically it beat the 8-bit Nintendo hands down, but it still hasn't taken significant market share from Nintendo.

This is down to marketing, brand loyalty and timing. Sega is the undisputed king of Europe, so if Nintendo launch into Europe it is up against the market leader, brand loyalty and an established 16-bit console with significant software support. This, coupled with Nintendo's failure to establish a credible UK presence (at least until the recent the arrival of the Turtles pack), raises doubts about Super Famicon's British success.



• The racing game* F-Zero *features superbly smooth scrolling.

In the US the situation is different. The Sega Megadrive is established and selling well, but Sega has always been second and Nintendo is unassailable. It is possible the Super Famicom will come to Europe before the US because if Nintendo leaves it too late they will be left with crumbs in a growing and buoyant market.

The bottom line is that the Super Famicom is an awesome piece of hardware which will have a significant impact on gaming in this country. ■

ALL THINGS BRIGHT AND TECHNICAL

- **The unit is powered by a 10V DC x 850 milliamps supply unit. It weighs 1.35kg and measures 200mm x 242mm x74mm.**
- **The CPU is 16-bit with DMA. It can operate at three clock speeds (1.79/.68 and 3.58MHz).**
- **Screen resolution can be 256 x 224 or 512 x 448 with a choice of 128 colours from 32,768.**
- **It has a Digital Sound Processor, which is 8-bit and runs at 8MIPS. It also boasts 16 channel PCM, sampling of 32KHz and 256 bytes of RAM.**
- **The CPU has 128K of RAM and the PPU (a special sprite chip) has another 64K.**

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TAKEAWAY A LAPTOP

A Mac to take away used to be in the domain of fast food. Keith Pomfret looked at the Outbound, a laptop for less than £2,000 that puts the Macintosh user on the street.

The Outbound is a Macintosh in a portable machine that weighs less and costs less than Apple's own heavyweight portable. To make it work without infringing Apple's patents it 'shares' the System ROMs of Mac Plus or an SE so you'll need one to make the Outbound work.

It has a megabyte of RAM, with another 4Mb which is used instead of a hard disk for storing files and programs. 1.44Mb high density 3.5-inch floppy can read and write Mac and PC disks. There's a version available with a 40Mb hard disk instead of the floppy drive. The processor in the Outbound is the 68C000 which runs at 15MHz (twice as fast as the standard chip in the Plus and SE). The display is a backlit LCD with adjustable contrast that is slightly larger than an SE's screen; it is 640x400 pixels instead of the 512x342.

The keyboard is separate from the main unit and sends its signal via an infra red beam, in much the same way as the remote control on a TV or video. The system unit stands vertically and if you want a stable machine to use on your lap, it's possible to lock keyboard to system unit for a more robust laptop.

The problem of a mouse-based computer as a laptop has been solved by the Isopoint device. This is a horizontally sliding and vertically rolling pad below the spacebar that allows you to simultaneously mimic the movement of a mouse. While it is a little tricky at first, you soon get used to it and it takes up less space than the trakball that is usually used as a captive mouse when there's a space problem. There are a range of optional extras including extra batteries, a case, a mouse, SCSI adapter and external disk drives. Power supplies are available for the US and Europe.

In order to use the Outbound, the ROMs are taken from your host machine and placed in the Outbound by your dealer. In the office, the Outbound connects to the host machine and you can use the Plus or SE in the normal way only with the advantage of all the Outbound RAM (maximum of 4Mb between both machines) and the LCD screen of the Outbound too. The advantage of two screens is that you can have a work window open on one and all your ancillary tasks open on the other.

PRICES

Outbound with floppy drive	£1,895
Outbound with 40Mb hard drive	£2,595
Plus/SE interface kit	£100
External floppy	£259
SCSI adapter	£129
Carry case	£99
Mouse	£99
PSU	£49.95
Extra battery	£49.95

Outbound is available from Computers Unlimited, 2, The Business Centre, Colindeep Lane, London, NW9 6DU. Telephone: 081-200 8282

Another advantage of this connected mode, known as docking, is that your desk Mac benefits from the faster 15 MHz processor of the Outbound. When you disconnect the Outbound to work away from the office, it takes the System ROMs with it and the host machine is disabled until its return.

I left the office to sit on a nearby hill top to design a couple of pages

Working on battery power alone, the manufacturer claims the Outbound can run from its internal battery for up to three hours. Despite following advice on maximising battery use, we were unable to operate the Outbound for more than 85 minutes. If the battery does fail, there's a lithium cell to protect the silicon disk and this is claimed to protect the system from storage loss for around 24 hours.

The awkward shape of the Outbound makes it an unusual machine to use on the lap and I was worried about it slipping off (it didn't). On a table in a crowded restaurant, the infra red keyboard allowed it to be perched on my place setting while I sat back in the chair with the Outbound keyboard on my lap. It's difficult to describe the user-friendliness of the machine that's using the system of a Macintosh. The Mac's supposed to be the most user friendly and the easiest machine to pick up and use and the Outbound is the same. The familiar WIMP interface, a clear uncluttered simple to use screen and access to reams of productivity software that uses the same keystrokes makes it the simplest and most desirable portable I've ever used.

To test its power, I loaded Quark *XPress* (the DTP program that *Express* is produced on) and left the office to sit on a nearby hill top to design a couple of pages. Once I had saved them I was able to upload them to an office Mac via a cellphone and modem. It is possible to write, design and DTP a page anywhere and send it back to the office. The Outbound was able to run every piece of Mac software that I tried in it. All the heavyweights were happy to run.

My only real qualm was the battery life. With machines managing more than four hours away from the mains, a machine without a hard disk drive should be managing more than it did. The spare batteries are expensive at £49.95 – they are exactly the same model that I have in my cellular telephone and colleagues rich enough to own camcorders recognised them too. I tried a cellphone battery in the Outbound and it lasted just as long – the cellphone battery retails at £25.

It's a machine to aspire to and I'll be sorry to have to return the review model. In the office, it made my aging Mac Plus tootle along a bit quicker than usual and the advantage of the two machines sharing their resources was a great benefit. Using it as a true portable meant obtaining an extra battery and for peace of mind, finding a flat surface to work on. I didn't feel happy with it on my lap although it remained there safely enough.

It fitted into my briefcase with power supply documents and disks, but the supplied carry case was more convenient (if a little expensive.)

The only competition to the Outbound is the 'official' 12-pound Apple Mac portable. I prefer the Outbound. It's three pounds lighter, £1,300 cheaper and as a portable is much more convenient. ■

SPECIFICATION

Processor	68C000 (15MHz)
RAM	1Mb expandable to 4Mb.
Silicon Disk	4Mb expandable to 16Mb.
Floppy drive	1.44Mb Mac/PC 3.5-inch drive.
Hard Drive (optional)	40Mb 2.5-inch internal drive (replaces floppy).
Display	LCD with fluorescent backlight (640x400 pixels) software adjustable contrast.
Keyboard	63 key detachable infra red keyboard conforming to SE standard (without numerical keypad).
Pointing device	Isopoint.
Battery	Standard computer/cellphone/camcorder lead-acid battery.
Power	From battery or AC adapter.
Ports	Apple-talk compatible printer port, comms port and host. connector port.

THE ATARI ABC

Now, there's a PC-AT compatible that not only solves problems like other AT compatibles, it also solves the one problem that its predecessors have created ... affordability.

Silica Systems are pleased to present the new Atari ABC. The ABC is a 286 AT compatible that runs at over 5 times the performance of the IBM XT. This is achieved by combining the power and speed of a 16-bit 286 processor, with Atari Corp's development experience and engineering capabilities, which use the very latest in design technology. However, the Atari ABC's are available at 'XT prices' and many XT owners will wonder why they paid more, but got less!

The ABC is a reliable, high performance computer, built to exceptionally rigorous standards. It is well designed, to a state of the art specification, maintaining maximum expansion capability for the future. This includes up to 4Mb of RAM and 3 AT expansion slots. Plus, unusually for a PC at this price, the ABC has the ability to install two or three extra drives, with the cabling already inside the CPU.

The ABC has a host of impressive features, all built-in as standard, encouraging simple installation and ease of use. In addition, the ABC's small footprint and quiet operating, mean that you will notice it less on your desk than other PC's. Except, of course, when you begin to take advantage of its AT power.

At its remarkably low price point, the ABC is ideally suited for home, office and educational use and will take full advantage of the vast range of PC compatible software. And, with 12 months FREE on-site maintenance (8 hour response), you can rest assured that your ABC will be fully supported.

The ABC is the latest addition to a comprehensive range of both 286 (8Mhz or 12Mhz) and 386 (16Mhz and 20Mhz) PC's, from the Business Systems Division of Atari Corp. Atari's PC range offers an unsurpassed combination of reliability, compatibility and expandability, with unique features like Atari's 44Mb removable hard disk on their PC4. Return the coupon NOW for further details of the complete range of PC products from Atari's Business Systems Division.

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£1400! Yes - fourteen hundred pounds of assorted all-sorts all for you. And they're only an answer away!

No! – The final freebie of 1990 isn't a colour NeXT workstation. Nothing so monolithic indeed. Instead we're going for the stocking-at-the-bottom of-the-bed approach. The My-God-what-a-weird-bunch of-presents-Are-my-parents-on-drugs-or-what? approach. And even if they were they could never imagine what Keith Pomfret looks like with a fluffy white beard and a red hat with a bobble on it. For it is he you have to thank for this miraculous compendium of prizes – yes an even bigger blagger than guy who sold the Eiffel tower to the Yanks as scrap. So what does the incomparable Monsieur Pomfret have in his super soar-away sack for you this yuletide eh chums?

Well, we're talking 450 quids worth of ***3D Text Animator*** for the Amiga for starters. Yes, 15 spanking brand new copies of the one and only package available kindly donated by GEM distribution.

But, Amiganauts that's not all. How about **5 annual subscriptions worth £20 a shot to *JAM?*** – the Amazing Amiga fanzine we really shouldn't mention because one day it might be competition but in the meantime it's okay 'cos it's not on a newsstand. And neither for that matter is ***Cyber Times* – or Mondo 3000 as we call it round here** – the UK's most futuristic fandango beaming in with another 5 annual subscriptions worth another £100 and a whole lot of cutting edge copy. Or, still on the reading front, how about **another 5 subs worth a 100 quid to well wonderful *WACCI*** – the CPCzine that's wholly produced with *Protext*?

Which brings us nicely onto a couple of copies of ***Protext* for the CPC and PCW** which would normally knock you back £60 a go if those wonderful wizards at Arnor weren't still such an amenable bunch of chappies despite having £750 worth of the 16-bit beauty given away in a competition about Albania of all things.

Yep, this page is **WEIRD**. And to prove it the next prize we're giving away is **three underwater cameras** from Maplin. Wild or what? Monsieur Pom really excelled himself on that one eh?. Throw in **three Stretch cameras** – you know, the wide-angle jobbies where you take a roll of film and hand in the camera for development – and that's another £100 worth of goodies. Happy Xmas Maplin! – and keep knocking out the great catalogues.

So what's next? **A hundred quid's worth of assorted classical CDs** that's what – What on earth can be going on? Well, Future just happens to publish *Classic CD* so we'll leave the rest up to you.

And finally, oh so finally, there's the **Personal Edition of *Navigator*** for all you PC roadsters. A £330 piece of pristine route planning software that'll get you from A to B via C and D in no time at all.

Gosh that was a runaround wasn't it? So what are the questions then? Ah, well seeing as how the prizes are so diverse you'd hardly expect the questions to be connected in any way would you? And indeed they're not. In fact there's only one!

And this is it.

1) One snowy morning, Santa and his little elf chums are hanging out in their Lapland castle, drinking large scotches and checking through the thousands of letters they've received that morning. Outside, his seven reindeers are merrily eating their little red berry breakfasts and preparing for the long delivery day ahead. And my, aren't they having fun?

They're laughing their little booties off are Rudolph the red-nosed reindeer, Prancer, Dasher, Dancer, Donna and Blitzen. But poor old Bruno the brown-nosed reindeer isn't laughing. No Bruno's very sad. He's stood all alone.

He has been ever since the day he slipped when running behind Rudolph in the team. And even Santa had laughed when he found out how Bruno had got his nickname. But Santa's a kind old soul and even now he's coming trundling along towards Bruno with a special message.

•Your yo-ho-ho host for the final freebie filching- Mr Keith 'Santa's just a pervert in red who comes down a chimney' Pomfret in his famous 'wishing you a merry thingy' mode.

"Well Bruno", Santa whispers in his ear, "I have a special job for you this fine crisp morning; a job so special that none of my other reindeers could complete it". Bruno bashfully rears his big brown head to reveal his big brown eyes and looks expectingly at his master. "You must go to California and fetch me a portable NeXT Colour workstation with built-in CD-ROM, rewriteable optical disk, RISC graphics processor and custom front-end", Santa continues, casually swigging from his bottle of Scotch, "There's a little boy in England called Timmy who had his stolen by American law enforcement officials and he's been crying his heart out ever since. He's so upset, there were even tears staining the little letter he'd sent to us on Centrefold notepaper". "But", Bruno bashfully replies," where in California must I go to get this state-of-the-art 68040-based Unix platform?". "Well that's the problem, Bruno", Santa admits, "I don't know – you see I've never been to California as it's far too hot for me and the sight of all those bikini-clad girls would burst the buttons on my tunic. All you can hope for is that the readers of *New Computer Express* might be able to help you out". "Oh yes", says Bruno, "that's a good idea, I'll get in touch with it's editor". "Good thinking, Bruno my boy, I wish you luck on this errand of mercy and I'll wait for your safe return. But remember", whispers Santa while patting Bruno warmly on the head, "You screw up and you're so much dead venison pal!".

So readers, where in California is NeXt based? Send your help to "Please, oh please don't kill Bruno" at the usual address. And have a happy Xmas !!!

Name..

Address..

...

The answer is 1)

Seeing as there's loads of different prizes and you don't know which one I'd prefer

you better send me...if i'm lucky

Otherwise, I'll take whatever else is on offer anyway.

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FOR ONLY £199 INC VAT

SPECIFICATION

- ★ ***Processor:*** Intel 80C88 at 4.9152Mhz.
- ★ ***Operating System:*** Compatible with MS-DOS 2.11.
- ★ ***Internal ROM:*** 256K containing BIOS, operating system and applications suite.
- ★ ***RAM:*** 128K with an internal RAM disk, configurable from 8K. Externally expandable to 640K RAM.
- ★ ***Keyboard:*** 63 keys, QWERTY, IBM PC BIOS compatible. Buried numeric pad and function keys. Optional key click.
- ★ ***Character Set:*** Extended IBM ASCII (255 characters).
- ★ ***Mass storage:*** credit card sized memory cards (32K or 64K or 128K RAM).
- ★ ***Display:*** Graphics LCD, supertwist technology, MDA compatible, 40 columns x 8 lines, 240 x 64 pixels (with the option to window a full 80 x 25 character display). Keyboard controlled contrast.
- ★ ***Peripherals:*** 60 pin expansion BUS to take serial and parallel ports and memory expansion units.
- ★ ***Size:*** 8″ x 4″ x 1″ (200mm x 105mm x 29mm).
- ★ ***Weight:*** 495 grammes (with batteries).
- ★ ***Applications:*** calendar and diary, address and phone book, Lotus 1-2-3 compatible spreadsheet, text processor, communications software.

COMING SOON!

In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And it doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.

5 BUILT-IN APPLICATIONS TO GET YOU ORGANISED!

To get you started, Portfolio comes with a suite of five useful functions built-in, all accessible from a simple menu display.

TIME MANAGER

More than just an electronic diary, the Portfolio Time Manager enables you to plan your appointments via a comprehensive calendar and diary. It can even be programmed to sound an audible alarm at specific times to remind you of important appointments.

CALCULATOR

Your Portfolio will be invaluable in the office or at home as a powerful pocket calculator. It has a full range of functions, including factorial, power and root calculations, all with multi display formats and memories.

ADDRESS BOOK & DIALLER

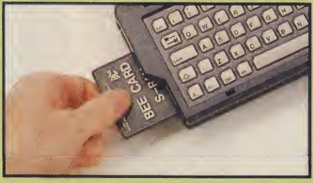
Portfolio has a complete address book facility that allows you to store hundreds of addresses and phone numbers. And, at the touch of a button, you can retrieve any one of them, or search for a specific grouping, such as "all Italian restaurants". And, when you are ready to book your table, hold your Portfolio to your telephone mouthpiece and use its special built-in tone dialler to dial the number for you.

TEXT PROCESSOR

The Portfolio's built-in text processor program includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

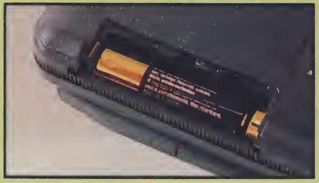
SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns x 225 rows and reads/writes Lotus V1.0 and V2.01 files, so you can transfer data to and from Lotus 1-2-3 on your desktop PC. The Portfolio's 256K ROM includes MS-DOS and PC BIOS compatible systems software.



MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.



POWER SUPPLY

Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A 'battery-low' warning and memory back-up ensure that information is not lost when the batteries are changed.

INTERFACES & PERIPHERALS

Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

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Before you decide when to buy your new Atari Portfolio, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Portfolio, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new Portfolio products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature and begin to experience the "Silica Systems Service".

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PLEASE SEND INFORMATION ON PORTFOLIO

Mr/Mrs/Ms: .... Initials: .... Surname: ....

Address: ....

....

.... Postcode: ....

Tel (Home): .... Tel (Work): ....

Company Name: ....

Which computer(s), if any, do you own? ....

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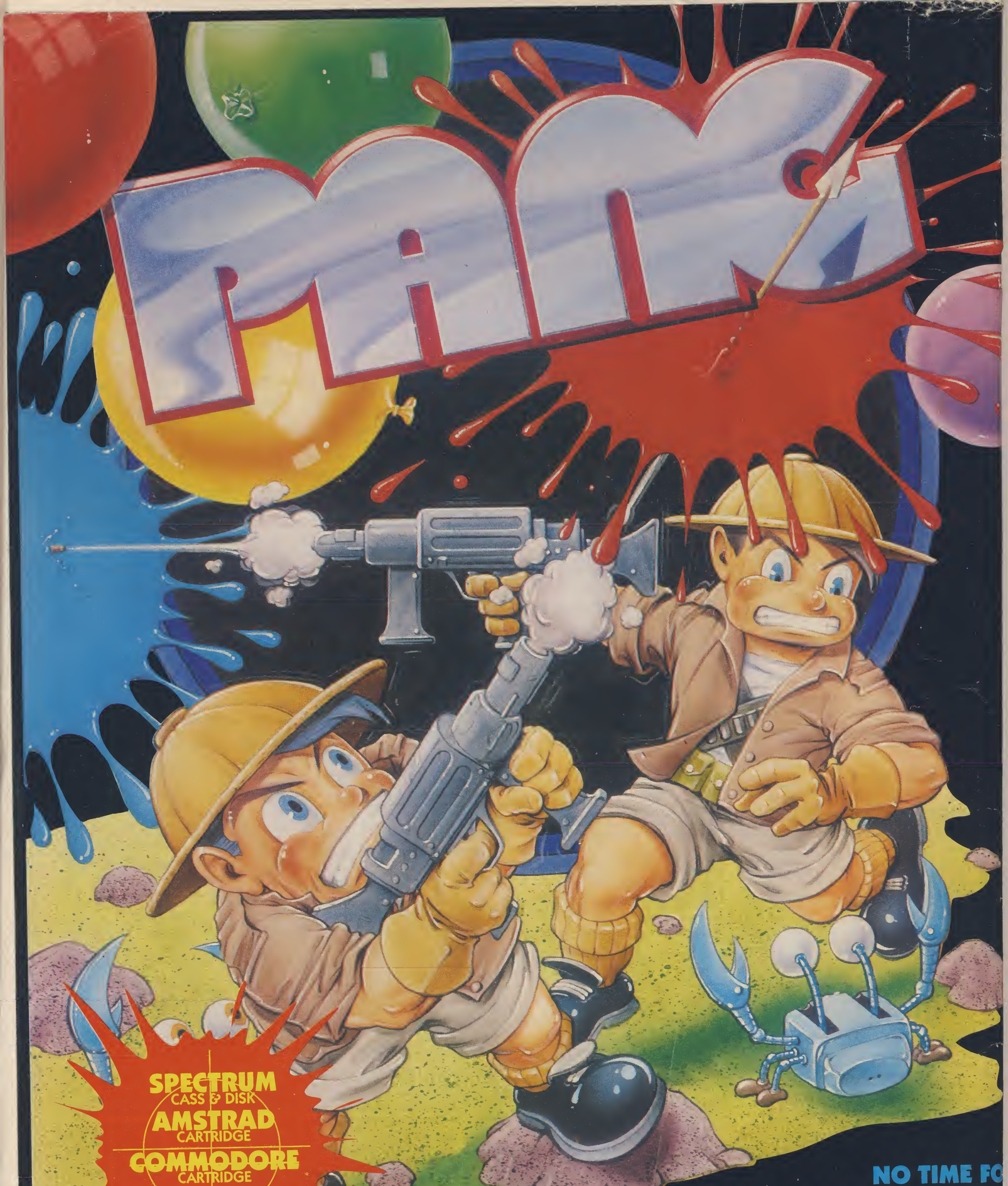

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